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TECHNICAL SPECIFICATION

**LTE;
5G;**

Mission Critical (MC) services;

Part 6: Mission Critical Video (MCVideo) User Equipment (UE)

Protocol conformance specification

(3GPP TS 37.579-6 version 17.0.0 Release 17)



Reference

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Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

The present document is part 1 of a multi-part deliverable covering conformance test specification for Mission Critical Services consisting of:

3GPP TS 37.579-1 [2]: "Mission Critical (MC) services; Part 1: Common test environment" (the present document)

3GPP TS 37.579-2 [24]: "Mission Critical (MC) services; Part 2: Mission Critical Push To Talk (MCPTT) User Equipment (UE) Protocol conformance specification"

3GPP TS 37.579-4 [4]: "Mission Critical (MC) services; Part 4: Test Applicability and Implementation Conformance Statement (ICS)"

3GPP TS 37.579-5 [5]: "Mission Critical (MC) services; Part 5: Abstract test suite (ATS)"

3GPP TS 37.579-6: "Mission Critical (MC) services: Mission Critical Video (MCVideo) User Equipment (UE) Protocol conformance specification"

3GPP TS 37.579-7 [25]: "Mission Critical (MC) services; Part 7: Mission Critical Data (MCData) User Equipment (UE) Protocol conformance specification"

In the present document, modal verbs have the following meanings:

- shall** indicates a mandatory requirement to do something
- shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

- should** indicates a recommendation to do something
- should not** indicates a recommendation not to do something
- may** indicates permission to do something
- need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

1 Scope

The present document specifies the protocol conformance testing for testing a MCVideo Client for compliance to the Mission Critical Video (MCVideo) protocol requirements defined by 3GPP.

In particular the present document contains:

- the overall test structure;
- the test configurations;
- the conformance requirement and reference to the core specifications;
- the test purposes; and
- a brief description of the test procedure, the specific test requirements and short message exchange table.

The present document is valid for MCVideo Clients implemented according to 3GPP releases starting from Release 13 up to the Release indicated on the cover page of the present document.

The following information relevant to testing specified in the present document could be found in accompanying specifications:

- default setting of the test parameters TS 37.579-1 [2];
- Implementation Conformance Statement (ICS) TS 37.579-4 [4] and Implementation eXtra Information for Testing (IXIT) TS 37.579-5 [5];
- the applicability of each test case TS 37.579-4 [4].

The test cases are expected to be executed through the 3GPP radio interface. The present document does not specify the protocol conformance testing for the EPS (LTE) bearers which carry the MCVideo data sent or received by the MCVideo Client and which are required to be supported by the UE in which the MCVideo Client is installed. This is defined in TS 36.523-1 [6].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 37.579-1: "Mission Critical (MC) services; Part 1: Common test environment".
- [3] Void
- [4] 3GPP TS 37.579-4: " Mission Critical (MC) services; Part 4: Test Applicability and Implementation Conformance Statement (ICS).
- [5] 3GPP TS 37.579-5: "Mission Critical (MC) services; Part 5: Abstract test suite (ATS)".
- [6] 3GPP TS 36.523-1: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification".

- [7] Void
- [8] Void
- [9] 3GPP TS 24.379: "Mission Critical Push To Talk (MCPTT) call control; Protocol specification".
- [10] 3GPP TS 24.380: "Mission Critical Push To Talk (MCPTT) media plane control; Protocol specification".
- [11] 3GPP TS 24.481: "Mission Critical Services (MCS) group management; Protocol specification".
- [12] 3GPP TS 24.482: "Mission Critical Services (MCS) identity management; Protocol specification".
- [13] 3GPP TS 24.483: "Mission Critical Services (MCS) Management Object (MO)".
- [14] 3GPP TS 24.484: "Mission Critical Services (MCS) configuration management; Protocol specification".
- [15] 3GPP TS 33.179: " Security of Mission Critical Push To Talk (MCPTT) over LTE".
- [16] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".
- [17] Void
- [18] Void.
- [19] 3GPP TS 36.509: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Special conformance testing functions for User Equipment (UE)".
- [20] 3GPP TS 36.508: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRAN); Common Test Environments for User Equipment (UE) Conformance Testing".
- [21] OpenID Connect 1.0: "OpenID Connect Core 1.0 incorporating errata set 1", http://openid.net/specs/openid-connect-core-1_0.html.
- [22] 3GPP TS 33.310: "Network Domain Security (NDS); Authentication Framework (AF)".
- [23] Void
- [24] 3GPP TS 37.579-2: "Mission Critical (MC) services; Part 2: Mission Critical Push To Talk (MCPTT) User Equipment (UE) Protocol conformance specification".
- [25] 3GPP TS 37.579-7: "Mission Critical (MC) services; Part 7: Mission Critical Data (MCData) User Equipment (UE) Protocol conformance specification".
- [26] 3GPP TS 24.281: Mission Critical Video (MCVideo) signalling control; Protocol specification".
- [27] 3GPP TS 24.581: "Mission Critical Video (MCVideo) media plane control; Protocol specification".
- [28] 3GPP TS 23.281: "Functional architecture and information flows to support Mission Critical Video (MCVideo); Stage 2".
- [29] 3GPP TS 22.281: "Mission Critical Video over LTE".
- [30] 3GPP TS 33.180: "Security of the mission critical service".
- [36] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

3 Definitions of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

For the purpose of the present document, the following terms and definitions given in TS 24.281 [26] apply:

An MCVideo user is affiliated to an MCVideo group
An MCVideo user is affiliated to an MCVideo group at an MCVideo client
Affiliation status
Group identity
MCVideo client ID
MCVideo emergency alert state
MCVideo emergency group state
MCVideo emergency group call state
MCVideo emergency private call
MCVideo emergency private call state
MCVideo emergency private priority state
MCVideo imminent peril group call state
MCVideo imminent peril group state
MCVideo private call
MCVideo private emergency alert state
MCVideo video media
Media-transmission control entity
Private call
Remote change of an MCVideo user's selected group
Temporary MCVideo group identity
Trusted mutual aid
Untrusted mutual aid

For the purpose of the present document, the following terms and definitions given in TS 33.180 [30] apply:

Client Server Key (CSK)
Private Call Key (PCK)
Signalling Protection Key (SPK)
XML Protection Key (XPK)

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

CSK	Client-Server Key
ECGI	E-UTRAN Cell Global Identification
FFS	For Further Study
ICS	Implementation Conformance Statement
IPEG	In-Progress Emergency Group
IPEPC	In-Progress Emergency Private Call
IPIG	In-Progress Imminent peril Group
IUT	Implementation Under Test
IXIT	Implementation eXtra Information for Testing
MBMS	Multimedia Broadcast and Multicast Service

MBSFN	Multimedia Broadcast multicast service Single Frequency Network
MC	Mission Critical
MCData	Mission Critical Data
MCPTT	Mission Critical Push To Talk
MCS	Mission Critical Service
MCVideo	Mission Critical Video
MCVideo group ID	MCVideo group Identity
MIME	Multipurpose Internet Mail Extensions
MVEA	MCVideo Emergency Alert
MVEG	MCVideo Emergency Group
MVEGC	MCVideo Emergency Group Call
MVEPC	MCVideo Emergency Private Call
MVEPP	MCVideo Emergency Private Priority
MVES	MCVideo Emergency State
MVIG	MCVideo Imminent peril Group
MVIGC	MCVideo Imminent peril Group Call
MONP	MC service Off-Network Protocol
MVPEA	MCVideo Private Emergency Alert
NAT	Network Address Translation
PCC	Policy and Charging Control
PCCB	Private Call Call-Back
PLMN	Public Land Mobile Network
QCI	QoS Class Identifier
RTP	Real-time Transport Protocol
SAI	Service Area Identifier
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SPK	Signalling Protection Key
SS	System Simulator
SSRC	Synchronization SouRCe
TGI	Temporary MCVideo Group Identity
TMGI	Temporary Mobile Group Identity
TP	Transmission Point
TP	Test Purpose
UE	User Equipment
URI	Uniform Resource Identifier
XPK	XML Protection Key

4 General

4.1 Test methodology

4.1.1 Testing of optional functions and procedures

Any function or procedure which is optional, may be subject to a conformance test if it is implemented in the MCVideo Client.

A declaration by the MCVideo Client supplier (to use the Implementation Conformance Statement (ICS) proforma specified in TS 37.579-4 [4]) is used to determine whether an optional function/procedure has been implemented.

4.1.2 Test interfaces and facilities

Detailed descriptions of the MCVideo

Client test interfaces and special facilities for testing are provided in TS 36.509 [19].

4.2 Implicit testing

For some 3GPP MCVideo protocol features conformance is not verified explicitly in the present document. This does not imply that correct functioning of these features is not essential, but that these are implicitly tested to a sufficient degree in tests which are not explicitly dedicated to test the feature.

4.3 Repetition of tests

As a general rule, the test cases specified in the present document are highly reproducible and do not need to be repeated unless otherwise stated.

4.4 Handling of differences between conformance requirements in different releases of cores specifications

The conformance requirements which determine the scope of each test case are explicitly copy-pasted from relevant core specifications in the especially dedicated for this clause of each test with the title 'Conformance requirements'.

NOTE: When in the copy/pasted text there are references to other specifications the reference numbers will not match the reference numbers used in the present document. This approach has been taken in order to allow easy copy and then search for conformance requirements in those specifications.

When differences between conformance requirements in different releases of the cores specifications have impact on the Pre-test conditions, Test procedure sequence or/and the Specific message contents, the Conformance requirements related to different releases are specified separately with clear indication of the Release of the spec from which they were copied.

When there is no Release indicated for a conformance requirement text, this should be understood either as the Conformance requirements in the latest version of the spec with release = the TC Applicability release (which can be found in TS 37.579-4 [4], Table 4-1: Applicability of tests and additional information for testing, column 'Release'), or, as the Conformance requirements in the latest version of the spec of the release when the feature was introduced to the core specs.

4.5 Reference conditions

The reference environments used by all signalling and protocol tests is specified in TS 37.579-1 [2]. Where a test requires an environment that is different, this will be specified in the test itself.

For all test cases in this document unless specified otherwise the condition MCVIDEO applies for all message contents.

4.6 Generic setup procedures

A set of basic generic procedures for MCVideo Client-Server communication are described in TS 37.579-1 [2]. These procedures will be used in numerous test cases throughout the present document.

5 MCVideo Client Configuration

5.1 Configuration / Authentication / User Authorization / UE Configuration / User Profile / Key Generation

5.1.1 Test Purpose (TP)

(1)

with { UE (MCVIDEO Client) attached to EPS services }

```

ensure that {
  when { the MCVideo User activates an MCVideo application and requests MCVideo initialisation }
  then { UE (MCVIDEO Client) performs MCVideo User Authentication }
}

```

(2)

```

with { UE (MCVIDEO Client) user authenticated }
ensure that {
  when { the UE (MCVIDEO Client) has established a secure HTTP tunnel }
  then { UE (MCVIDEO Client) performs key management authorization and obtains identity management
key material }
}

```

(3)

```

with { UE (MCVIDEO Client) has obtained identity management key material }
ensure that {
  when { the UE (MCVIDEO Client) requests user service authorization }
  then { UE (MCVIDEO Client) sends a user authorization request to the MCVideo Server }
}

```

(4)

```

with { UE (MCVIDEO Client) authorized for user services }
ensure that {
  when { the UE (MCVIDEO Client) requests configuration management authorization}
  then { UE (MCVIDEO Client) requests subscription to multiple documents simultaneously and
request the retrieval of the MCVideo UE Configuration document, the MCVideo User Profile
Configuration Document and the MCVideo Service Configuration Document }
}

```

(5)

```

with { UE (MCVIDEO Client) having obtained user configuration data }
ensure that {
  when { the UE (MCVIDEO Client) requests group management authorization }
  then { UE (MCVIDEO Client) receives the group profile including group traffic keys }
}

```

(6)

```

with { UE (MCVIDEO Client) having obtained all required configuration data }
ensure that {
  when { the UE (MCVIDEO Client) requires to refresh its service settings }
  then { UE (MCVIDEO Client) sends a SIP PUBLISH request }
}

```

5.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.482 clause 6.2.1 and Annex A.2.1.2, TS 24.484 clauses 4.2.1, 4.2.2.1, 6.2.2, 6.3.1.1, 6.3.2.1, 6.3.2.2, 6.3.3.2.1, 6.3.3.2.2, 6.3.13.2.1 and 6.3.13.2.2, TS 24.481 clauses 6.2.2.2, 6.2.3, 6.3.3.2.1, 6.3.3.2.2 and 6.3.13.2.1, TS 24.281 clauses 7.2.1, 7.2.1A, 7.2.2 and 7.2.3, TS 33.180 clauses 5.1.3.1, 5.3.3, 6.1.2, and Annex D. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.482, clause 6.2.1]

Upon an indication from the MC service client to initiate MC service user authentication, the IdM client shall perform the user authentication procedure according to 3GPP TS 33.180 [17] with the following clarifications:

- 1) shall establish a TLS tunnel to the authorisation endpoint of the IdM server as specified in 3GPP TS 33.180 [17] using the configured URL of the authorisation endpoint of the IdM server as specified in the "`<x>/OnNetwork/AppServerInfo/IDMSAuthEndpoint`" leaf node defined in 3GPP TS 24.483 [11] and the clarifications in annex A;
- 2) shall generate an OIDC Authentication Request message as specified in the OpenID Connect 1.0 [6] and IETF RFC 6749 [5] with the following clarifications:

- a) shall generate an HTTP GET request method according to IETF RFC 2616 [4];
- b) shall include the configured parameter IdM client id as the client_id parameter specified in 3GPP TS 33.180 [17] in the query component of the authorization endpoint's URI using the "application/x-www-form-urlencoded" format as specified in W3C.REC-html401-19991224 [7]; and

NOTE 1: The configuration of client_id is specified in 3GPP TS 24.483 [11].

- c) shall include the remaining required parameters as specified in 3GPP TS 33.180 [17] in the query component of the authorization endpoint's URI using the "application/x-www-form-urlencoded" format as specified in W3C.REC-html401-19991224 [7]; and

3) shall send the HTTP GET request method towards the IdM server.

NOTE 2: The OpenID Connect 1.0 [6] specification allows for an alternative mechanism for sending the OIDC Authentication request message using an HTTP POST request method which can be used in place of steps 1, 2, and 3 above.

Upon receipt of an HTTP 200 (OK) response from the IdM server, the IdM client:

1) shall prompt the MC service user for their username and password;

NOTE 3: Other types of authentication are supported and are not defined by the OIDC specifications. 3GPP TS 33.180 [17] has defined username and password as a mandatory authentication method to be supported, hence a procedure to realize that method is included here.

2) shall generate an HTTP POST request method containing the MC service user's username and password; and

3) shall send the HTTP POST request method towards the IdM server.

Upon receipt of an OIDC Authentication Response message, the IdM client:

1) shall establish a TLS tunnel to the token endpoint of the IdM server as specified in 3GPP TS 33.180 [17] using the configured URL of the token endpoint of the IdM server as specified in the "/<x>/OnNetwork/AppServerInfo/IDMSTokenEndpoint" leaf node defined in 3GPP TS 24.483 [11] and the clarifications in annex A;

2) shall generate an OIDC Token Request message as specified in OpenID Connect 1.0 [6] and IETF RFC 6749 [5] with the following clarifications:

a) shall generate an HTTP POST request method according to IETF RFC 2616 [4]; and

b) shall include the grant_type parameter set to a value of "authorization_code" and the other required parameters in the entity body of the HTTP POST request method using the using the "application/x-www-form-urlencoded" format as specified in 3GPP TS 33.180 [17]; and

3) shall send the HTTP POST request method towards the IdM server.

Upon receipt of an OIDC Token Response message, the IdM client:

1) shall validate the id_token, access_token and refresh token in the received OIDC Token Response message as specified in the OpenID Connect 1.0 [6] specification; and

2) shall provide the id_token and access_token in the received OIDC Token Response message to the MC service client.

NOTE 4: The method in which the IdM client provides the id_token and access_token to the MC service client is implementation specific.

The MC UE may repeat the entire procedure in this clause as needed to obtain the necessary authorisation tokens for the MC service clients, depending on the scope parameter in the Authentication Request message as specified in 3GPP TS 33.180 [17].

[TS 24.482, Annex A.2.1.2]

The HTTP client in the UE shall support the client role defined in IETF RFC 2818 [10].

The HTTP client in the UE shall support transport layer security (TLS) as specified in 3GPP TS 33.180 [17].

The HTTP client in the UE is configured with the following parameters:

- 1) a home HTTP proxy FQDN;
- 2) a home HTTP proxy port;
- 3) a TLS tunnel authentication method. The TLS tunnel authentication method parameter is set to one of the following:
 - a) one-way authentication of the HTTP proxy based on the server certificate;
 - b) mutual authentication based on certificates; and
 - c) mutual authentication based on pre-shared key;as specified in 3GPP TS 33.180 [17];
- 4) if the TLS tunnel authentication method is the mutual authentication based on certificates:
 - a) TLS tunnel authentication X.509 certificate; and
- 5) if the TLS tunnel authentication method is the mutual authentication based on pre-shared key:
 - a) TLS tunnel authentication pre-shared key.

The HTTP client in the UE shall establish a TCP connection towards the home HTTP proxy FQDN and the home HTTP proxy port, unless the specific TCP connection is to be used for the IdM client to IdM server procedures described in clause 6.2 and 6.3 in the present document, in which case the HTTP client shall establish a TCP connection towards the IdM server.

The HTTP client in the UE shall establish a TLS tunnel via the TCP connection as specified in 3GPP TS 33.180 [17]. When establishing the TLS tunnel, the HTTP client in the UE shall act as a TLS client and the UE shall perform the TLS tunnel authentication using the TLS authentication method indicated by the TLS tunnel authentication method parameter according to 3GPP TS 33.180 [17]. The UE shall use the configured TLS tunnel authentication X.509 certificate and the configured TLS tunnel authentication pre-shared key when applicable for the used TLS authentication method. In order to prevent man-in-the-middle attacks, the HTTP client in the UE shall check the home HTTP proxy FQDN against the server's identity as presented in the received server's certificate message if the TCP connection terminates on the HTTP proxy. The HTTP client in the UE shall not check the portion of dereferenced HTTP URL against the server's identity as presented in the received server's certificate message if the TCP connection terminates on the HTTP proxy, but shall do so if the TCP connection terminates on the IdM server.

NOTE: The TLS tunnel can be terminated in the HTTP proxy (rather than in the HTTP server providing the dereferenced HTTP URL).

The HTTP client in the UE shall send and receive all HTTP messages via the TLS tunnel.

If the HTTP client in the UE has an access token of the "bearer" token type as specified in IETF RFC 6750 [14], the HTTP client in the UE shall include an Authorization header field with the "Bearer" authentication scheme as specified in IETF RFC 6750 [14] in HTTP requests.

[TS 33.180, Annex D.1]

This annex specifies the key management procedures between the KMS and the key management client that allows keys to be provisioned to the key management client based on an identity. It describes the requests and responses for the authorization following provisioning messages:

- KMS Initialize.
- KMS KeyProvision.
- KMS CertCache.

All KMS communications are made via HTTPS. The key management client is provisioned via XML content in the KMS's response. The XML content is designed to be extendable to allow KMS/client providers to add further

information in the XML. Where the interface is extended, a different XML namespace should be used (so that may be ignored by non-compatible clients).

It is assumed that transmissions between the KMS and the key management client are secure and that the KMS has authenticated the identity of the key management client.

Additionally, to allow the transmission of key material securely between a secure element within the KMS and a secure element within the key management client, a security extension is defined which allows messages to be signed and key material to be encrypted using a shared Transport Key (TrK).

[TS 33.180, clause 5.1.3.1]

This clause expands on the MCX user service authorization step shown in figure 5.1.1-1 step C.

MCX User Service Authorization is the function that validates whether or not a MCX user has the authority to access certain MCX services. In order to gain access to MCX services, the MCX client in the UE presents an access token (acquired during user authentication as described in clause 5.1.2) to each service of interest (i.e. Key Management, MCX server, Configuration Management, Group Management, etc.). If the access token is valid, then the user is granted the use of that service. Figure 5.1.3.1-1 shows the flow for user authorization which covers key management authorization, MCX user service authorization, configuration management authorization, and group management authorization.

NOTE: All HTTP traffic between the UE and HTTP proxy, and all HTTP traffic between the UE and KMS (if not going through the HTTP proxy) is protected using HTTPS.

For key management authorization, the KM client in the UE presents an access token to the KMS over HTTP. The KMS validates the access token and if successful, provides one or more sets of user specific key material back to the UE KM client based on the MC service ID(s) present in the access token (MCPTT ID, MCVideo ID and/or MCVideo ID). User specific key material includes identity based key information for media and signalling protection. This key management authorisation may be repeated for each KM service the user is authorised to use (MCPTT, MCVideo, MCVideo).

For MCPTT user service authorization, the MCPTT client in the UE presents an access token to the MCPTT server over SIP. The MCPTT server validates the access token and if successful, authorizes the user for full MCPTT services and sends an acknowledgement back to the MCPTT client. The MCPTT server then maps and maintains the IMPU to MCPTT ID association. The MCPTT ID to IMPU association shall only be known to the application layer. The SIP message used to convey the access token from the MCPTT client to the MCPTT server may be either a SIP REGISTER or SIP PUBLISH message.

For MCVideo service authorization, the MCVideo client in the UE presents an access token to the MCVideo server over SIP. The MCVideo server validates the access token and if successful, authorizes the user for full MCVideo services and sends an acknowledgement back to the MCVideo client. The MCVideo server then maps and maintains the IMPU to MCVideo ID association. The MCVideo ID to IMPU association shall only be known to the application layer. The SIP message used to convey the access token from the MCVideo client to the MCVideo server may be either a SIP REGISTER or SIP PUBLISH message.

For MCVideo user service authorization, the MCVideo client in the UE presents an access token to the MCVideo server over SIP. The MCVideo server validates the access token and if successful, authorizes the user for full MCVideo services and sends an acknowledgement back to the MCVideo client. The MCVideo server then maps and maintains the IMPU to MCVideo ID association. The MCVideo ID to IMPU association shall only be known to the application layer. The SIP message used to convey the access token from the MCVideo client to the MCVideo server may be either a SIP REGISTER or SIP PUBLISH message.

The UE can now perform configuration management authorization and download the user profile for the service(s) (MCPTT, MCVideo, MCVideo). Following the flow described in subclause 10.1.4.3 of 3GPP TS 23.280 [36] " MC service user obtains the MC service user profile(s) from the network ", the Configuration Management (CM) client in the UE sends an access token in the user profile query to the Configuration Management server over HTTP. The CM server receives the request and validates the access token, and if valid, the CM server uses the identity from the access token (MCPTT ID, MCVideo ID, MCVideo ID) to obtain the user profile from the MCX user database. The CM server then sends the user profile back to the CM client over HTTP. This configuration management authorisation may be repeated for each CM service the user is authorised to use (MCPTT, MCVideo, MCVideo).

Upon receiving each user profile, the Group Management (GM) client in the UE can now perform group management authorization. The GM client obtains the user's group membership information from the user profile, and following the

flow shown in clause 10.1.5.2 of 3GPP TS 23.280 [36] "Retrieve group configurations at the group management client", the Group Management (GM) client in the UE sends an access token in the Get group configuration request to the host GM server of the group membership over HTTP. The GM server validates the access token, and if valid, completes the flow. As part of group management authorization, group key information is provided as per subclause 5.7 of the present document. This group management authorisation may be repeated for each GM service the user is authorised to use (MCPTT, MCVideo, MCVideo).

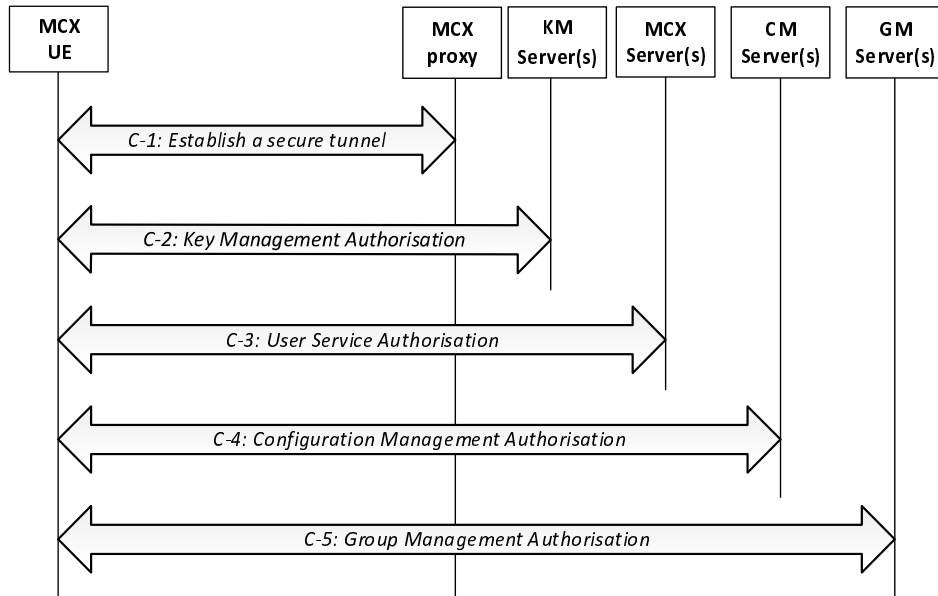


Figure 5.1.3.1-1: MCX user service authorization

The user authorization procedure in Step C of Figure 5.1.1-1 is further detailed into 5 sub steps that comprise the MCX user service authorization process:

- Step C-1: If not already done, establish a secure HTTP tunnel using HTTPS between the MCX UE and MCX proxy server. Subsequent HTTP messaging makes use of this tunnel (with the possible exception of the KMS client to KMS server interface).
- Step C-2: The KMS client in the UE presents an access token to the KMS over HTTP. The KMS authorizes the user for key management services based upon the MC service ID(s) provided and replies to the client with identity specific key information. This step may be repeated to authorise the user with additional KM services (MCPTT, MCVideo, MCVideo) as necessary.
- Step C-3: The MCX client in the UE presents an access token to the MCX server over SIP as defined in clause 5.1.3.2 of the present document. This step may be repeated to authorise the user with additional MCX services (MCPTT, MCVideo, MCVideo) as necessary.
- Step C-4: The CM client in the UE follows the "MCX user obtains the user profile (UE initiated)" flow from clause 10.1.4.3 of 3GPP TS 23.280 [36], presenting an access token in the Get MCX user profile request over HTTP. If the token is valid, then the CM server authorizes the user for configuration management services. Completion of this step results in the CM server providing the user's profile to the CM client. This step may be repeated as necessary to obtain the user profile for additional services (MCPTT, MCVideo, or MCVideo).
- Step C-5: The GM client in the UE follows the "Retrieve group configurations at the group management client" flow as shown in clause 10.1.5.2 of 3GPP TS 23.280 [36], presenting an access token in the Get group configuration request over HTTP. If the token is valid, the GMS authorizes the user for group management services. Completion of this step results in the GMS sending the user's group policy information and group key information to the GM client. This step may be repeated to authorise the user for additional group services (MCPTT, MCVideo, MCVideo) as necessary.

[TS 33.180, clause 5.3.3]

The procedure for the provision of identity-specific key material when the HTTP proxy is supported between the KMS and the KMS client is described in figure 5.3.3-1. The procedure is the same whether the key management client in the MC UE, an MCX Server or a Group Management Server is making the request.

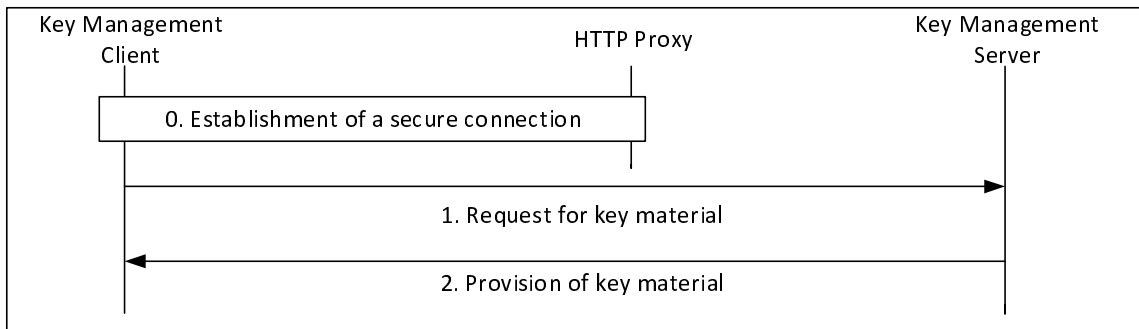


Figure 5.3.3-1: Provisioning of key material via the HTTP proxy

The procedure in figure 5.3.3-1 is now described step-by-step.

- 0) The key management client establishes a connection to the KMS. As with other elements in the Common Services Core, the connection is routed via, and secured by, the HTTP Proxy. The message flow below is within this secure connection.

NOTE: Additionally, the connection between the KMS and the HTTP Proxy is secured according to clause 6.1.

- 1) The key management client makes a request for user key material from the KMS. The request contains an access token to authenticate the user as defined in clause 5.1. There are three types of request (as defined in Annex D):
 - a) KMSInit Request. This request is the first request sent to the KMS to setup the user.
 - b) KMSKeyProv Request: This request is to obtain new key material from the KMS. The request may contain details of a specific identity (e.g. MCPTT ID) required for key management, and may contain a specific time for which the key material is required.
 - c) KMSCertCache Request: This request is to obtain external KMS certificates associated with external security domains (managed by another KMS). The request may contain details of the latest version of the cache received by the client.
- 2) The KMS provides a response based upon the authenticated user and the user's request. For public safety use, the key material itself shall be encrypted using a 256-bit transport key (TrK). The response may also be signed by the TrK or the InK. The TrK and InK are initially distributed via an out-of-band mechanism along with their 32-bit identifiers, the TrK-ID and InK-ID, respectively. The responses are:
 - a) KMSInit Response. This response contains domain parameters and optionally, a new TrK and/or a new InK.
 - b) KMSKeyProv Response: This response provides new key material to the user and optionally, a new TrK.
 - c) KMSCertCache Response: This response contains new or updated home KMS certificates and/or external KMS certificates required by the user for communications with external security domains.

The procedure for the provisioning of identity-specific key material when the HTTP proxy is not used between the KMS and the KMS client is as described in Figure 5.3.3-2.

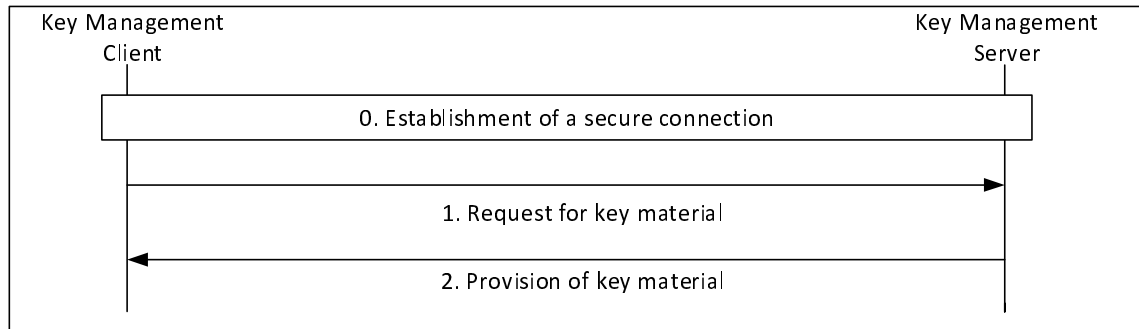


Figure 5.3.3-2: Provisioning of key material without a proxy

The procedure in Figure 5.3.3-2 is now described step-by-step:

- 0) The key management client establishes a direct HTTPS connection to the KMS. The following message flow is within this secure connection.
- 1) The key management client makes a request to the KMS. The same requests can be made as defined above with a proxy.
- 2) The KMS provides a response based upon the authenticated user and the user's request. Optionally, the key material itself may also be encrypted using a 256-bit transport key (TrK). The response may also be signed using the TrK or the InK. The TrK and InK are initially distributed via an out-of-band mechanism along with their 32-bit identifiers (TrK-ID and InK-ID respectively).

As a result of this procedure, the key management client has securely obtained key material for use within the MC system.

[TS 24.484, clause 4.2.1]

Upon start up the MC UE bootstraps the required information (e.g. FQDN or IP address) to locate the configuration management server for configuration of the MCS UE initial configuration management object (MO) and the default MCPTT user profile configuration management object (MO).

In order to obtain access to MC services the UE needs to obtain configuration data either online via the network or offline using some external device (e.g. a laptop). As part of the bootstrap process the MC UE needs to discover either:

1. the online configuration management server in the network that configures the MCS UE initial configuration MO and the default MCS user profile configuration MO(s), then the MC UE:
 - a) using the URI of the configuration management server obtained from the MCS UE initial configuration MO, obtains for each MCS that is enabled:
 - the appropriateMCS UE configuration document;
 - the appropriateMCS user profile configuration document; and
 - the appropriateMC service configuration document; and
 - b) using the URI of the group management server obtained from the MCS UE initial configuration MO obtain the MCS group document; or
2. the:
 - a) offline configuration management server on the external device that configures the MC UE with the:
 - MCS UE initial configuration MO;
 - appropriate MCS UE configuration MO(s);
 - appropriate MCS user profile MO(s); and
 - appropriate MCS service configuration MO(s); and

- b) offline group management server on the external device that configures the MC UE with the MCS group MO.

The mechanism to discover the online or offline configuration management server is dependent on the protocol used to manage and configure the MO and is out of scope of the present document.

[TS 24.484, clause 4.2.2.1]

The format of the MCS UE initial configuration MO downloaded to the MC UE during online configuration is defined in 3GPP TS 24.483 [4].

The format of the MCS group document downloaded to the MC UE during online configuration is defined in 3GPP TS 24.481 [5].

Figure 4.2.2-1 shows the MCPTT UE online configuration time sequence.

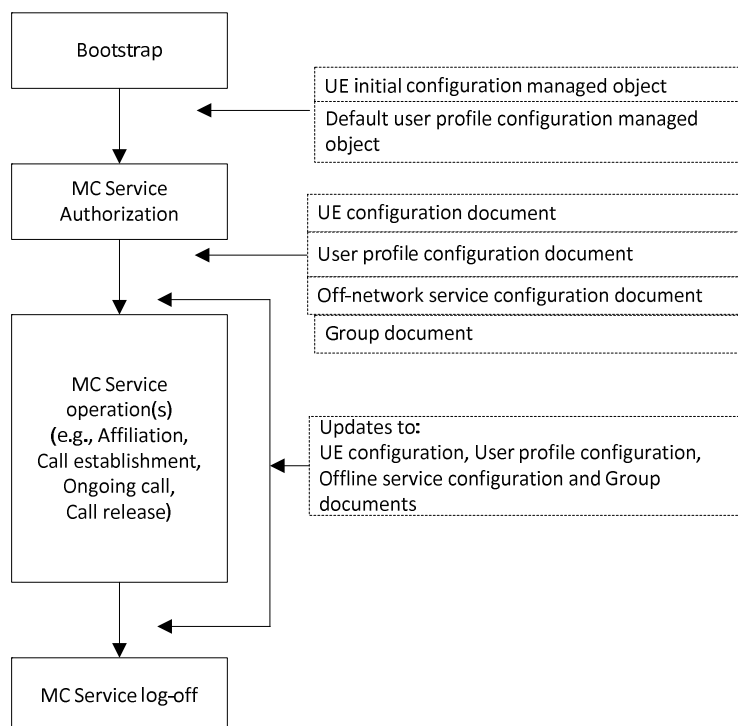


Figure 4.2.2-1 MC UE online configuration time sequence

If the MCS UE initial configuration MO has changed from the version stored in the MC UE, the updated MC UE initial configuration MO is downloaded to the MCPTT UE.

If the MCS UE initial configuration MO contains a <default-user-profile> element and the identified default MCS user profile configuration MO(s) have changed from the version stored in the MC UE, the updated default MCS user profile configuration MO(s) are downloaded to the MC UE.

NOTE 1: The default MCS user profile configuration MO(s) define the default identity(s) for the enabled mission critical service(s) and the profile of services available to the user (e.g. emergency MCPTT services) prior to user authentication.

The MC UE contacts the identity management server using the HTTPS URI stored in the MCS UE initial configuration MO and performs MC User authentication as specified in 3GPP TS 24.482 [6].

The MC UE, using the identities obtained during MC user authentication, subscribes to the MCS UE configuration document, the MCS user profile configuration document and the MCS service configuration document for each enabled MCS using the procedure for subscribing to multiple documents simultaneously using the subscription proxy function specified in subclause 6.3.13.2.2 (i.e., the CMS acts as a Subscription Proxy) and subscribes to the MCS group document using the procedure specified in 3GPP TS 24.481 [5]. If these documents have been updated since the current version stored in the MC UE, then the MC UE will receive a SIP NOTIFY request with an XCAP Diff document (see

IETF RFC 5875 [11]), in which case the CMC updates its local document copies . Retrieval by the MC UE using the notified HTTPS URI of the MCS group document is performed as specified in 3GPP TS 24.481 [5].

NOTE 2: The MC UE can be notified of changes to an configuration documents at any time while using the MCS.

[TS 24.484, clause 6.2.2]

The CMC shall send the HTTP request over TLS connection as specified for the HTTP client in the UE in annex A of 3GPP TS 24.482 [6].

[TS 24.484, clause 6.3.1.1]

A CMC shall support subclause 6.1.1 "*Document Management*" of OMA OMA-TS-XDM_Core-V2_1 [2] and subclause 6.3.13.2.2 for subscribing to configuration management documents.

[TS 24.484, clause 6.3.3.2.1]

In order to retrieve a configuration management document, a GC shall send an HTTP GET request with the Request URI that references the document to be updated to the network according to procedures specified in IETF RFC 4825 [14] "*Retrieve a Document*".

[TS 24.484, clause 6.3.3.2.2]

In order to retrieve a configuration management document, a CMC shall perform the procedures in subclause 6.3.3.2.1 specified for GC. The CMC shall set the Request-URI of the HTTP GET request to the "CMSXCAPRootURI" configured as per 3GPP TS 24.483 [4] and include the "auid" as per the appropriate application usage in clause 7.

Subclause 7.5 specifies which configuration management documents can be retrieved from the CMS over the CSC-4 reference point.

[TS 24.484, clause 6.3.13.2.1]

This procedure enables the CMC to subscribe to notification of changes of one or more configuration management documents defined.

This procedure enables the MCS server to subscribe to notification of changes of the MCPTT service configuration document.

[TS 24.484, clause 6.3.13.2.2]

In order to subscribe to Configuration management document, a CMC shall send an initial SIP SUBSCRIBE request to the network according to the UE originating procedures specified in 3GPP TS 24.229 [22] and IETF RFC 5875 [11]. In the initial SIP SUBSCRIBE request, the CMC:

- a) ...
- b) if subscription to multiple documents simultaneously using the subscription proxy function is used:
 - 1) shall include an application/resource-lists+xml MIME body. In the application/resource-lists+xml MIME body, the CMC shall include one <entry> element for each document or element to be subscribed to, such that the "uri" attribute of the <entry> element contains a relative path reference:
 - A) with the base URI being equal to the "CMSXCAPRootURI" configured in the CMC as per 3GPP TS 24.483 [4]; and
 - B) with the "auid" parameter set to the appropriate application usage identifying a configuration management document;
 - 2) shall set the Request-URI to the configured public service identity for performing subscription proxy function of the CMS;
- c) shall include an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcptt-access-token> element set to the value of the access token received during authentication procedure as described in 3GPP TS 24.482 [6];
- d) if identity hiding is required:

- 1) shall perform the confidentiality protection procedures and integrity protection procedures defined in 3GPP TS 24.379 [9] for MCPTT client on the application/vnd.3gpp.mcptt-info+xml MIME body and on the application/resource-lists+xml MIME body; and
- 2) shall include an application/mikey MIME body with the CSK as specified in 3GPP TS 24.379 [9];
- e) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24.229 [22]), in a P-Preferred-Service header field according to IETF RFC 6050 [23]; and
- f) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcptt" in the Contact header field.

Upon receiving a SIP NOTIFY request associated with a subscription created as result of the sent initial SIP SUBSCRIBE request:

- 1) if identity hiding is required, the CMC shall perform the confidentiality protection procedures and integrity protection procedures defined in 3GPP TS 24.379 [9] for MC client; and
- 2) shall handle the SIP NOTIFY request according to IETF RFC 5875 [11].

In order to re-subscribe to notification of changes of a modified list of one or more configuration management documents; a CMC shall send a SIP re-SUBSCRIBE request to the network according to the UE originating procedures specified in 3GPP TS 24.229 [22] and IETF RFC 5875 [11]. In the SIP re-SUBSCRIBE request, the CMC:

- a) if direct subscription is used, shall set the Request URI to a SIP URI containing:
 - 1) the base URI being equal to the "CMSXCAPRootURI" configured in the CMC as per 3GPP TS 24.483 [4]; and
 - 2) the "auid" parameter set to the appropriate application usage identifying a configuration management document as described in clause 7;
- b) if subscription to multiple documents simultaneously using the subscription proxy function is used:
 - 1) shall include an application/resource-lists+xml MIME body. In the application/resource-lists+xml MIME body, the CMC shall include one <entry> element for each document or element to be subscribed to, such that the "uri" attribute of the <entry> element contains a relative path reference:
 - A) with the base URI being equal to the "CMSXCAPRootURI" configured in the CMC as per 3GPP TS 24.483 [4]; and
 - B) with the "auid" parameter set to the appropriate application usage identifying a configuration management document as described in clause 7;
 - c) if identity hiding is required, shall perform the confidentiality protection procedures and integrity protection procedures defined in 3GPP TS 24.379 [9] for MC client on the application/vnd.3gpp.mcptt-info+xml MIME body and on the application/resource-lists+xml MIME body using the CSK included in the initial SIP SUBSCRIBE request; and
 - d) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcptt" in the Contact header field.

[TS 24.481, clauses 6.2.2.2]

In order to address an existing group document defining a group ID known by GC, the GC shall set the Request-URI of an HTTP request to a XCAP URI identifying a group document addressed by a group ID as described in subclause 7.2.10.2, where the group ID is set to the group ID known by GC and where the XCAP root URI is the XCAP root URI configured in the GC.

[TS 24.481, clauses 6.2.3]

The GMC shall send the HTTP request over a TLS connection as specified for the HTTP client in the UE in annex A of 3GPP TS 24.482 [10].

The GMC shall perform the procedures in subclause 6.2.2 specified for GC.

[TS 24.481, clauses 6.3.3.2.1]

In order to retrieve a group document, a GC shall send an HTTP GET request with the Request URI that references the document to be retrieved to the network according to procedures specified in IETF RFC 4825 [22] "*Fetch a Document*".

[TS 24.481, clauses 6.3.3.2.2]

In order to retrieve a group document, a GMC shall perform the procedures in subclause 6.3.3.2.1 specified for GC.

[TS 24.481, clauses 6.3.13.2.1]

In order to subscribe to notification of changes of:

- a) one or more MCVideo group documents of MCVideo groups identified by MCVideo group IDs;

...

a GMC shall send an initial SIP SUBSCRIBE request to the network according to the UE originating procedures specified in 3GPP TS 24.229 [12] and IETF RFC 5875 [13]. In the initial SIP SUBSCRIBE request, the GMC:

- a) shall include an application/resource-lists+xml MIME body. In the application/resource-lists+xml MIME body, the GMC shall include one <entry> element for each document or element to be subscribed to, such that the "uri" attribute of the <entry> element:
 - 1) contains a relative path reference:
 - A) with the base URI being equal to the XCAP root URI configured in the GMC; and
 - B) identifying a group document addressed by a group ID as described in subclause 7.2.10.2 where the group ID is set to the MCVideo group ID; or

...

- b) shall set the Request-URI to the configured public service identity for performing subscription proxy function of the GMS;
- c) shall include an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcptt-access-token> element set to the value of the access token received during authentication procedure as described in 3GPP TS 24.482 [49];
- d) if identity hiding is required:
 - 1) shall perform the confidentiality protection procedures and integrity protection procedures defined in 3GPP TS 24.379 [5] for MCPTT client on the application/vnd.3gpp.mcptt-info+xml MIME body and on the application/resource-lists+xml MIME body; and
 - 2) shall include an application/mikey MIME body with the CSK as specified in 3GPP TS 24.379 [5];
- e) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24.229 [12]), in a P-Preferred-Service header field according to IETF RFC 6050 [14]; and
- f) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcptt" in the Contact header field.

Upon receiving a SIP NOTIFY request associated with a subscription created as result of the sent initial SIP SUBSCRIBE request:

- 1) if identity hiding is required, the GMC shall perform the confidentiality protection procedures and integrity protection procedures defined in 3GPP TS 24.379 [5] for MCPTT client; and
- 2) shall handle the SIP NOTIFY request according to IETF RFC 5875 [13].

[TS 24.281, clause 7.2.1]

When the MCVideo client performs SIP registration for service authorization the MCVideo client shall perform the registration procedures as specified in 3GPP TS 24.229 [11].

The MCVideo client shall include the following media feature tags in the Contact header field of the SIP REGISTER request:

- 1) the g.3gpp.mcvideo media feature tag; and
- 2) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo".

NOTE 1: If the MCVideo client logs off from the MCVideo service but the MCVideo UE remains registered the MCVideo UE performs a re-registration as specified in 3GPP TS 24.229 [11] without both the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP REGISTER request.

If the MCVideo client, upon performing SIP registration:

- 1) has successfully finished the user authentication procedure as described in 3GPP TS 24.482 [52];
- 2) has available an access-token;
- 3) based on implementation decides to use SIP REGISTER for service authorization;
- 4) confidentiality protection is disabled as specified in subclause 6.6.2.3.1; and
- 5) integrity protection is disabled as specified in subclause 6.6.3.3.1;

then the MCVideo client shall include in the SIP REGISTER request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in Annex F.1 with:

- 1) the <mcvideo-access-token> element set to the value of the access token received during the user authentication procedures; and
- 2) the <mcvideo-client-id> element set to the value of the MCVideo client ID of the originating MCVideo client.

NOTE 2: the access-token contains the MCVideo ID of the user.

If the MCVideo client, upon performing SIP registration:

- 1) has successfully finished the user authentication procedure as described in 3GPP TS 24.482 [52];
- 2) has an available access-token;
- 3) based on implementation decides to use SIP REGISTER for service authorization; and
- 4) either confidentiality protection is enabled as specified in subclause 6.6.2.3.1 or integrity protection is enabled as specified in subclause 6.6.3.3.1;

then the MCVideo client:

- 1) shall include an application/mikey MIME body with the CSK as MIKEY-SAKKE I_MESSAGE as specified in 3GPP TS 33.180 [8] in the body of the SIP REGISTER request;
- 2) if confidentiality protection is enabled as specified in subclause 6.6.2.3.1, shall include in the body of the SIP REGISTER request, an application/vnd.3gpp.mcvideo-info+xml MIME body with the following clarifications:
 - a) shall encrypt the received access-token using the client server key (CSK) and include the <mcvideo-access-token> element set to the encrypted access-token, as specified in subclause 6.6.2.3.3; and
 - b) shall encrypt the MCVideo client ID of the originating MCVideo client and include the <mcvideo-client-id> element set to the encrypted MCVideo client ID;
- 3) if confidentiality protection is disabled as specified in subclause 6.6.2.3.1, shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in Annex F.1 with:
 - a) the <mcvideo-access-token> element set to the value of the access token received during the user authentication procedures; and
 - b) the <mcvideo-client-id> element set to the value of the MCVideo client ID of the originating MCVideo client; and

- 4) if integrity protection is enabled as specified in subclause 6.6.3.3.1, shall use the CSK to integrity protect the application/vnd.3gpp.mcvideo-info+xml MIME body by following the procedures in subclause 6.6.3.3.3.

[TS 24.281, clause 7.2.1A]

This procedure is only referenced from other procedures.

When populating the SIP PUBLISH request, the MCVideo client shall:

- 1) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the MCVideo user;
- 2) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];
- 3) shall set the Event header field to the "poc-settings" value; and
- 4) shall set the Expires header field according to IETF RFC 3903 [12], to 4294967295, if the MCVideo user is not removing the MCVideo service settings, otherwise to remove the MCVideo service settings the MCVideo client shall set the Expires header field to zero.

NOTE 1: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

NOTE 2: The expiration timer of the MCVideo client service settings is only applicable for the MCVideo client service settings from the MCVideo client that matches the Instance Identifier URN. The expiration timer of MCVideo user service settings is also updated in the MCVideo server if expiration timer of MCVideo client service settings is updated in the MCVideo server.

NOTE 3: Removing the MCVideo service settings by setting the Expires header field to zero, logs off the MCVideo client from the MCVideo service.

[TS 24.281, clause 7.2.2]

If based on implementation the MCVideo client decides to use SIP PUBLISH for MCVideo server settings to also perform service authorization and

- 1) has successfully finished the user authentication procedure as described in 3GPP TS 24.482 [52]; and
- 2) has available an access-token;

then the MCVideo client:

- 1) shall perform the procedures in subclause 7.2.1A;
- 2) if confidentiality protection is disabled as specified in subclause 6.6.2.3.1 and integrity protection is disabled, shall include in the body of the SIP PUBLISH request, an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideo-access-token> element set to the value of the access token received during the user authentication procedures;
- 3) if either confidentiality protection is enabled as specified in subclause 6.6.2.3.1 or integrity protection is enabled as specified in subclause 6.6.3.3.1 shall include an application/mikey MIME body with the CSK as MIKEY-SAKKE I_MESSAGE as specified in 3GPP TS 33.180 [8] in the body of the SIP PUBLISH request;
- 4) if confidentiality protection is enabled as specified in subclause 6.6.2.3.1, shall include in the body of the SIP PUBLISH request an application/vnd.3gpp.mcvideo-info+xml MIME body with:
 - a) the <mcvideo-access-token> element set to the received access-token encrypted using the CSK, as specified in subclause 6.6.2.3.3; and
 - b) the <mcvideo-client-id> element set to the encrypted MCVideo client ID of the originating MCVideo client, as specified in subclause 6.6.2.3.3;
- 5) if confidentiality protection is disabled as specified in subclause 6.6.2.3.1, shall include in the body of the SIP PUBLISH request, an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with:

- a) the <mcvideo-access-token> element set to the value of the access token received during the user authentication procedures in the body of the SIP PUBLISH request; and
 - b) the <mcvideo-client-id> element set to the value of the MCVideo client ID of the originating MCVideo client;
- 6) shall include an application/poc-settings+xml MIME body as defined in 3GPP TS 24.379 [51] containing:
- a) the Answer-Mode Indication setting in the <am-settings> element of the poc-settings event package set to the current answer mode setting ("auto-answer" or "manual-answer") of the MCVideo client according to IETF RFC 4354 [53]; and
 - b) the <selected-user-profile-index> element set to the value contained in the "user-profile-index" attribute of the selected MCVideo user profile as defined in 3GPP TS 24.484 [25]; and
- 7) if integrity protection is enabled as specified in subclause 6.6.3.3.1, shall use the CSK to integrity protect the application/vnd.3gpp.mcvideo-info+xml MIME body and application/poc-settings+xml MIME body by following the procedures in subclause 6.6.3.3.3.

The MCVideo client shall send the SIP PUBLISH request according to 3GPP TS 24.229 [11].

[TS 24.281, clause 7.2.3]

To set, update, remove or refresh the MCVideo service settings, the MCVideo client shall generate a SIP PUBLISH request according 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 4354 [53]. In the SIP PUBLISH request, the MCVideo client:

- 1) shall perform the procedures in subclause 7.2.1A;
- 2) if confidentiality protection is enabled as specified in subclause 6.6.2.3.1, shall include in the body of the SIP PUBLISH request, an application/vnd.3gpp.mcvideo-info+xml MIME body with:
 - a) the <mcvideo-request-uri> element set to the targeted MCVideo ID encrypted using the CSK, as specified in subclause 6.6.2.3.3; and
 - b) the <mcvideo-client-id> element set to the encrypted MCVideo client ID of the originating MCVideo client, as specified in subclause 6.6.2.3.3;
- 3) if confidentiality protection is disabled as specified in subclause 6.6.2.3.1, shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with:
 - a) the <mcvideo-request-uri> set to the cleartext targeted MCVideo ID; and
 - b) the <mcvideo-client-id> element set to the value of the MCVideo client ID of the originating MCVideo client;
- 4) shall include an application/poc-settings+xml MIME body as defined in 3GPP TS 24.379 [51] containing:
 - a) the Answer-Mode Indication setting in the <am-settings> element of the poc-settings event package set to the current answer mode setting ("auto-answer" or "manual-answer") of the MCVideo client according to IETF RFC 4354 [53]; and
 - b) the <selected-user-profile-index> element set to the value contained in the "user-profile-index" attribute of the selected MCVideo user profile as defined in 3GPP TS 24.484 [25]; and
- 5) if integrity protection is enabled as specified in subclause 6.6.3.3.1, shall use the CSK to integrity protect the application/vnd.3gpp.mcvideo-info+xml MIME body and application/poc-settings+xml MIME body by following the procedures in subclause 6.6.3.3.3.

The MCVideo client shall send the SIP PUBLISH request according to 3GPP TS 24.229 [11].

On receiving the SIP 200 (OK) response to the SIP PUBLISH request the MCVideo client may indicate to the MCVideo User the successful communication of the MCVideo service settings to the MCVideo server.

[TS 33.180, clause 6.1.2]

The support of Transport Layer Security (TLS) on HTTP-1 is mandatory. The profile for TLS implementation and usage shall follow the provisions given in 3GPP TS 33.310 [5], annex E.

If the PSK TLS based authentication mechanism is supported, the HTTP client in the MC UE and the HTTP Proxy shall support the TLS version, PSK ciphersuites and TLS Extensions as specified in the TLS profile given in 3GPP TS 33.310 [5], annex E. The usage of pre-shared key ciphersuites for TLS is specified in the TLS profile given in 3GPP TS 33.310 [5], annex E.

5.1.3 Test description

5.1.3.1 Pre-test conditions

Same pre-test conditions as for MCPTT test case 5.1 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

5.1.3.2 Test procedure sequence

Same test procedure sequence as for MCPTT test case 5.1 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

5.1.3.3 Specific message contents

Same specific message contents as for MCPTT test case 5.1 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"
- Condition MCVIDEO is used for all messages.

5.2 Configuration / Group Creation / Group ReGroup Creation / Group ReGroup Teardown

5.2.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) attached to EPS services }
ensure that {
  when { the UE (MCVideo Client) requests formation of a new MCVideo group }
  then { on successful group creation the UE (MCVideo Client) has access to the new group }
}
```

(2)

```
with { UE (MCVideo Client) having access to at least two MCVideo groups }
ensure that {
  when { the UE (MCVideo Client) requests the groups to be combined }
  then { on successful group regrouping the UE (MCVideo Client) has access to the temporary group }
}
```

(3)

```
with { UE (MCVideo Client) having access to a temporary group }
ensure that {
  when { the UE (MCVideo Client) requests temporary group tear down }
  then { on successful group tear down the UE (MCVideo Client) removes the temporary group }
}
```

5.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.481 clauses 6.3.2.2.1, 6.3.2.2.2, 6.3.14.1, 6.3.14.2, 6.3.15.1 and 6.3.15.2; TS 33.180, clause 7.3.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.481, clause 6.3.2.2.1]

In order to create a group document, a GC shall create an XML document of the application usage specified in subclause 7.2.1 and shall send the XML document to the network according to procedures specified in IETF RFC 4825 [22] "*Create or Replace a Document*". The GC shall set the Request-URI of the HTTP PUT request to an XCAP URI in users tree where the XUI is set to a group creation XUI configuration parameter.

[TS 24.481, clause 6.3.2.2.2]

In order to create a group document, a GMC shall perform the procedures in subclause 6.3.2.2.1 specified for GC.

[TS 24.481, clause 6.3.14.1]

This procedure enables a GMC to initiate creation of a temporary MCS group by combining MCS groups.

NOTE: The temporary MCS group formation procedure does not ensure that the MCSs of the temporary MCS group are the same as MCSs of each constituent MCS group of the temporary MCS group.

[TS 24.481, clause 6.3.14.2]

In order to form a temporary MCS group, a GMC shall send a HTTP POST request according to procedures specified in IETF RFC 2616 [21] and subclause 6.2.3. In the HTTP POST request, the GMC:

- a) shall set the Request-URI to an XCAP URI:
 - 1) in users tree where the XUI is set to a group creation XUI configuration parameter; and
 - 2) with the document selector identifying the temporary MCS group to be created; and
- b) shall include an application/vnd.3gpp.GMOP+xml MIME body containing a GMOP document requesting group regroup creation specified in subclause 7.3.4.3, with a <group> element containing a group document for an MCS group. In the group document, the GMC shall include the <on-network-temporary> element according to subclause 7.2. In the <on-network-temporary> element, the GMC shall include <constituent-MCPTT-group-IDs> element according to subclause 7.2. In the <constituent-MCPTT-group-IDs> element, the GMC shall include one <constituent-MCPTT-group-ID> element according to subclause 7.2 for each MCS group to be combined.

Upon reception of an HTTP 2xx response to the sent HTTP POST request, the GMC shall consider the temporary MCS group formation as successful.

Upon reception of an HTTP 409 (Conflict) response with at least one <alt-value> element in the <uniqueness-failure> error element, the GMC may repeat procedures of the present subclause and identify the temporary MCS group being formed with an MCS Group ID indicated in an <alt-value> element.

[TS 24.481, clause 6.3.15.1]

This procedure enables a GMC to initiate tear down of a temporary MCS group.

[TS 24.481, clause 6.3.15.2]

In order to tear down a temporary MCS group, the GMC shall send an HTTP DELETE request with Request-URI with an XCAP URI identifying a group document of the temporary MCS group according to procedures specified in IETF RFC 4825 [22] "*Delete an Element*".

[TS 33.180, clause 7.3.2]

The group creation procedure is described in clause 10.2.3 of 3GPP TS 23.280 [36] and applies to the MCPTT scenario of normal group creation by an MC administrator and user regrouping operations by an authorized user/dispatcher. To

establish the security context for the group, the GMS follows the procedures in clause 5.7 to create a new GMK and GMK-ID.

The encapsulated GMK and GUK-ID is sent to group members by the GMS within a notification message (step 4 in clause 10.2.3 of 3GPP TS 23.280 [36]). The procedure is equivalent to that described in clause 5.7 of this specification.

5.2.3 Test description

5.2.3.1 Pre-test conditions

Same pre-test conditions as for MCPTT test case 5.2 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

5.2.3.2 Test procedure sequence

Same test procedure sequence as for MCPTT test case 5.2 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

5.2.3.3 Specific message contents

Same specific message contents as for MCPTT test case 5.2 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"
- Condition MCVIDEO is used for all messages.

5.3 Configuration / Group Affiliation / Remote change / De-affiliation / Home MCVideo system

5.3.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) already provisioned with the group information or a pointer to the group
information, that the UE (MCVideo Client) is allowed to be affiliated }
ensure that {
  when { MCVideo User requests for current affiliation status and to subscribe to affiliation status
changes for the MCVideo User }
  then { UE (MCVideo Client) requests to subscribe to affiliation status changes for the MCVideo
User by sending the SS (MCVideo Server) a SIP SUBSCRIBE message and starts informing the MCVideo
User of any affiliation status changes for the MCVideo User after the subscription is accepted }
}
```

(2)

```
with { UE (MCVideo Client) already provisioned with the group information or a pointer to the group
information, that the UE (MCVideo Client) is allowed to be affiliated }
ensure that {
  when { MCVideo User requests to affiliate to an MCVideo group }
  then { UE (MCVideo Client) requests to affiliate to a MCVideo group by sending the SS (MCVideo
Server) a SIP PUBLISH message }
}
```

(3)

```
with { UE (MCVideo Client) already provisioned with the group information or a pointer to the group
information, that the UE (MCVideo Client) is allowed to be affiliated }
ensure that {
  when { MCVideo User requests for current affiliation status and to subscribe to affiliation status
changes for a target user }
  then { UE (MCVideo Client) requests to subscribe to affiliation status changes for the target
user by sending the SS (MCVideo Server) a SIP SUBSCRIBE message and starts informing the MCVideo
User of any affiliation status changes for the target user after the subscription is accepted }
}
```

```
    }
```

(4)

```
with { UE (MCVideo Client) already provisioned with the group information or a pointer to the group
information that the UE (MCVideo Client) is allowed to make affiliation changes for another user }
ensure that {
  when { MCVideo User requests that a target user be affiliated to an MCVideo group via mandatory
mode }
  then { UE (MCVideo Client) requests that a target user be affiliated to an MCVideo group via
mandatory mode by sending the SS (MCVideo Server) a SIP PUBLISH message }
}
```

(5)

```
with { UE (MCVideo Client) already provisioned with the group information or a pointer to the group
information that the UE (MCVideo Client) is allowed to make affiliation changes for another user }
ensure that {
  when { MCVideo User requests that a target user be de-affiliated to an MCVideo group via mandatory
mode }
  then { UE (MCVideo Client) requests that a target user be de-affiliated to an MCVideo group via
mandatory mode by sending the SS (MCVideo Server) a SIP PUBLISH message }
}
```

(6)

```
with { UE (MCVideo Client) already provisioned with the group information or a pointer to the group
information that the UE (MCVideo Client) is allowed to make affiliation changes for another user }
ensure that {
  when { MCVideo User requests that a target user be affiliated to an MCVideo group via negotiated
mode }
  then { UE (MCVideo Client) requests that a target user be affiliated to an MCVideo group via
negotiated mode by sending the SS (MCVideo Server) a SIP MESSAGE }
}
```

(7)

```
with { UE (MCVideo Client) already provisioned with the group information or a pointer to the group
information, that the UE (MCVideo Client) is allowed to be affiliated }
ensure that {
  when { MCVideo User requests to de-subscribe to affiliation status changes for a target user }
  then { UE (MCVideo Client) requests to de-subscribe to affiliation status changes for a target
user by sending the SS (MCVideo Server) a SIP SUBSCRIBE message }
}
```

(8)

```
with { UE (MCVideo Client) already affiliated with a MCVideo group }
ensure that {
  when { MCVideo User requests to de-affiliate from an MCVideo group }
  then { UE (MCVideo Client) requests to de-affiliate from an MCVideo group by sending the SS
(MCVideo Server) a SIP PUBLISH message }
}
```

(9)

```
with { UE (MCVideo Client) already provisioned with the group information or a pointer to the group
information, that the UE (MCVideo Client) is allowed to be affiliated }
ensure that {
  when { MCVideo Server requests that the MCVideo User choose to affiliate to an MCVideo group via
negotiated mode by sending a SIP MESSAGE }
  then { UE (MCVideo Client) accepts to affiliate to a MCVideo group by sending the SS (MCVideo
Server) a SIP PUBLISH message }
}
```

5.3.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281, clauses 8.2.1.2, 8.2.1.3, 8.2.1.4, and 8.2.1.5. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-14 requirements.

[TS 24.281, clause 8.2.1.2]

In order:

- to indicate that an MCVideo user is interested in one or more MCVideo group(s) at an MCVideo client;
- to indicate that the MCVideo user is no longer interested in one or more MCVideo group(s) at the MCVideo client;
- to refresh indication of an MCVideo user interest in one or more MCVideo group(s) at an MCVideo client due to near expiration of the expiration time of an MCVideo group with the affiliation status set to the "affiliated" state received in a SIP NOTIFY request in subclause 8.2.1.3;
- to send an affiliation status change request in mandatory mode to another MCVideo user; or
- any combination of the above;

the MCVideo client shall generate a SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12], and IETF RFC 3856 [13].

In the SIP PUBLISH request, the MCVideo client:

- 1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;
- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the MCVideo user;
- 3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];
- 4) if the targeted MCVideo user is interested in at least one MCVideo group at the targeted MCVideo client, shall set the Expires header field according to IETF RFC 3903 [12], to 4294967295;

NOTE 1: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

- 5) if the targeted MCVideo user is no longer interested in any MCVideo group at the targeted MCVideo client, shall set the Expires header field according to IETF RFC 3903 [12], to zero; and
- 6) shall include an application/pidf+xml MIME body indicating per-user affiliation information according to subclause 8.3.1. In the MIME body, the MCVideo client:
 - a) shall include all MCVideo groups where the targeted MCVideo user indicates its interest at the targeted MCVideo client;
 - b) shall include the MCVideo client ID of the targeted MCVideo client;
 - c) shall not include the "status" attribute and the "expires" attribute in the <affiliation> element; and
 - d) shall set the <p-id> child element of the <presence> root element to a globally unique value.

The MCVideo client shall send the SIP PUBLISH request according to 3GPP TS 24.229 [11].

[TS 24.281, clause 8.2.1.3]

NOTE 1: The MCVideo UE also uses this procedure to determine which MCVideo groups the MCVideo user successfully affiliated to.

In order to discover MCVideo groups:

- 1) which the MCVideo user at an MCVideo client is affiliated to; or
- 2) which another MCVideo user is affiliated to;

the MCVideo client shall generate an initial SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16].

In the SIP SUBSCRIBE request, the MCVideo client:

- 1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;
- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the targeted MCVideo user;
- 3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];
- 4) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 2: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

- 5) if the MCVideo client wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero; and
- 6) shall include an Accept header field containing the application/pdf+xml MIME type; and
- 7) if requesting MCVideo groups where the MCVideo user is affiliated to at the MCVideo client, shall include an application/simple-filter+xml MIME body indicating per client restrictions of presence event package notification information according to subclause 8.3.2.

In order to re-subscribe or de-subscribe, the MCVideo client shall generate an in-dialog SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16]. In the SIP SUBSCRIBE request, the MCVideo client:

- 1) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 3: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

- 2) if the MCVideo client wants to de-subscribe, shall set the Expires header field according to IETF RFC 6665 [16], to zero; and
- 3) shall include an Accept header field containing the application/pdf+xml MIME type.

Upon receiving a SIP NOTIFY request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16], if SIP NOTIFY request contains an application/pdf+xml MIME body indicating per-user affiliation information constructed according to subclause 8.3.1, then the MCVideo client shall determine affiliation status of the MCVideo user for each MCVideo group at the MCVideo client(s) in the MIME body. If the <p-id> child element of the <presence> root element of the application/pdf+xml MIME body of the SIP NOTIFY request is included, the <p-id> element value indicates the SIP PUBLISH request which triggered sending of the SIP NOTIFY request.

[TS 24.281, clause 8.2.1.4]

NOTE: Procedure for sending affiliation status change request in negotiated mode to several target MCVideo users is not supported in this version of the specification.

Upon receiving a request from the MCVideo user to send an affiliation status change request in negotiated mode to a target MCVideo user, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]. In the SIP MESSAGE request, the MCVideo client:

- 1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the target MCVideo user;
- 3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP MESSAGE request;
- 4) shall include an application/vnd.3gpp.mcvideo-affiliation-command+xml MIME body as specified in Annex F.4; and
- 5) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP MESSAGE request, the MCVideo client shall indicate to the user that the request has been delivered to an MCVideo client of the target MCVideo user.

[TS 24.281, clause 8.2.1.5]

Upon receiving a SIP MESSAGE request containing:

- 1) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14]; and
- 2) an application/vnd.3gpp.mcvideo-affiliation-command+xml MIME body with a list of MCVideo groups for affiliation under the <affiliate> element and a list of MCVideo groups for de-affiliation under the <de-affiliate> element;

then the MCVideo client:

- 1) shall send a 200 (OK) response to the SIP MESSAGE request;
- 2) shall seek confirmation of the list of MCVideo groups for affiliation and the list of MCVideo groups for de-affiliation, resulting in an accepted list of MCVideo groups for affiliation and an accepted list of MCVideo groups for de-affiliation; and
- 3) if the user accepts the request:
 - a) shall perform affiliation for each entry in the accepted list of MCVideo groups for affiliation for which the MCVideo client is not affiliated, as specified in subclause 8.2.1.2; and
 - b) shall perform de-affiliation for each entry in the accepted list of MCVideo groups for de-affiliation for which the MCVideo client is affiliated, as specified in subclause 8.2.1.2.

5.3.3 Test description

5.3.3.1 Pre-test conditions

Same pre-test conditions as for MCPTT test case 5.3 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

5.3.3.2 Test procedure sequence

Same test procedure sequence as for MCPTT test case 5.3 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

5.3.3.3 Specific message contents

Same specific message contents as for MCPTT test case 5.3 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"
- Condition MCVIDEO is used for all messages.

5.4 Configuration / Determination of MCVideo Service Settings / Current Active MCVideo Settings / De-subscribe

5.4.1 Test Purpose (TP)

(1)

```
with { UE (MCVIDEO Client) registered and authorised for MCVIDEO Service }
ensure that {
  when { MCVideo User requests to verify the currently active MCVideo service settings or to
discover MCVideo service settings }
  then { UE (MCVideo Client) sends a SIP SUBSCRIBE message to find the MCVideo service settings
and responds to the SIP NOTIFY message with a SIP 200 (OK) message }
}
```

(2)

```
with { UE (MCVIDEO Client) having already subscribed to find the MCVideo service settings }
ensure that {
  when { MCVideo User requests to re-subscribe for MCVideo service settings }
  then { UE (MCVIDEO Client) sends a SIP SUBSCRIBE message to re-subscribe for the MCVideo service
settings and responds to the SIP NOTIFY message with a SIP 200 (OK) message }
}
```

(3)

```
with { UE (MCVIDEO Client) having already subscribed to find the MCVideo service settings }
ensure that {
  when { MCVideo User requests to de-subscribe for MCVideo service settings }
  then { UE (MCVIDEO Client) sends a SIP SUBSCRIBE message to de-subscribe for the MCVideo service
settings and responds to the SIP NOTIFY message with a SIP 200 (OK) message }
}
```

5.4.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clause 7.2.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 7.2.4]

In order to discover MCVideo service settings of another MCVideo client of the same MCVideo user or to verify the currently active MCVideo service settings of this MCVideo client, the MCVideo client shall generate an initial SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16], and IETF RFC 4354 [53].

In the SIP SUBSCRIBE request, the MCVideo client:

- 1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;
- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the MCVideo user;
- 3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];
- 4) shall set the Event header field to the 'poc-settings' value;
- 5) shall include an Accept header field containing the "application/poc-settings+xml" MIME type;
- 6) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295; and

NOTE 1: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

- 7) if the MCVideo client wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero.

In order to re-subscribe or de-subscribe, the MCVideo client shall generate an in-dialog SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16], IETF RFC 4354 [53]. In the SIP SUBSCRIBE request, the MCVideo client:

- 1) shall set the Event header field to the 'poc-settings' value;
- 2) shall include an Accept header field containing the "application/poc-settings+xml" MIME type;
- 3) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295; and

NOTE 2: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

- 4) if the MCVideo client wants to de-subscribe, shall set the Expires header field according to IETF RFC 6665 [16], to zero.

Upon receiving a SIP NOTIFY request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16] and IETF RFC 4354 [53], that contains an application/poc-settings+xml MIME body the MCVideo client shall cache:

- 1) the <am-settings> element of the poc-settings+xml MIME body for each MCVideo client identified by the "id" attribute according to IETF RFC 4354 [53] as the current Answer-mode indication of that MCPTT client; and
- 2) the <selected-user-profile-index> element of the poc-settings+xml MIME body for each MCVideo client identified by the "id" attribute according to IETF RFC 4354 [53] as the active MCVideo user profile of that MCVideo client.

5.4.3 Test description

5.4.3.1 Pre-test conditions

Same pre-test conditions as for MCPTT test case 5.5 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

5.4.3.2 Test procedure sequence

Same test procedure sequence as for MCPTT test case 5.5 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

5.4.3.3 Specific message contents

Same specific message contents as for MCPTT test case 5.5 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"
- Condition MCVIDEO is used for all messages.

6 On-Network Test Scenarios

6.1 Group Calls

6.1.1 Pre-Arranged Group Call

6.1.1.1 On-network / On-demand Pre-arranged Group Call / Automatic Commencement Mode / Transmission Control / Upgrade to Emergency Group Call / Cancel Emergency State / Upgrade to Imminent Peril Group Call / Cancel Imminent Peril State / Client Originated (CO)

6.1.1.1.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo On-demand Pre-arranged Group Call
forcing Automatic Commencement Mode and implicit Transmission Control }
  then { the UE (MCVideo Client) requests an On-demand Automatic Commencement Mode Pre-arranged
Group Call establishment with implicit Transmission Control by sending a SIP INVITE message, and,
after indication from the SS (MCVideo Server) that the call was established, provides transmission
granted notification to the MCVideo User }
}
```

(2)

```
with { the UE (MCVideo Client) having established a MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User(s) }
  then { the UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo
Server) (Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission End
Response, Transmission Idle) }
}
```

(3)

```
with { the UE (MCVideo Client) having established an On-demand Pre-arranged Group Call with
Automatic Commencement Mode and the MCVideo User being authorized for initiating a MCVideo Emergency
Group Call }
ensure that {
  when {the MCVideo User requests to upgrade the ongoing MCVideo Group Call to an MCVideo Emergency
Group Call with Transmission Control }
  then { the UE (MCVideo Client) sends a SIP re-INVITE request and upon receipt of a SIP 2xx
response considers the call as being upgraded to Emergency Group Call and notifies the MCVideo User
}
}
```

(4)

```
with { the UE (MCVideo Client) having upgraded to an Emergency Group Call }
ensure that {
  when { the MCVideo User continues communication with the invited MCVideo User(s) }
  then { the UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo
Server) }
}
```

(5)

```
with { the UE (MCVideo Client) having upgraded an On-demand Pre-arranged Group Call with Automatic
Commencement Mode to an Emergency Group Call and the MCVideo User being authorized for cancelling an
MCVideo Emergency state (MCVideo in-progress emergency cancel) }
ensure that {
  when { the MCVideo User requests to cancel the ongoing MCVideo Emergency state }
}
```

```

    then { the UE (MCVideo Client) sends a SIP re-INVITE request and upon receipt of a SIP 2xx
response considers the emergency condition cancelled, and notifies the user }
    }

```

(6)

```

with { the UE (MCVideo Client) having established an On-demand Pre-arranged Group Call with
Automatic Commencement Mode and the MCVideo User being authorized for initiating a MCVideo Imminent
Peril Group Call }
ensure that {
    when { the MCVideo User requests to upgrade the ongoing MCVideo Group Call to a MCVideo Imminent
Peril Group Call with Transmission Control }
    then { the UE (MCVideo Client) sends a SIP re-INVITE request and upon receipt of a SIP 2xx
response considers the call as being upgraded to Imminent Peril Group Call, and notifies the user }
    }

```

(7)

```

with {the UE (MCVideo Client) having upgraded to an Imminent Peril Group Call}
ensure that {
    when {the MCVideo User continues communication with the invited MCVideo User(s)}
    then {the UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo
Server) }
    }

```

(8)

```

with {the UE (MCVideo Client) having upgraded an On-demand Pre-arranged Group Call with Automatic
Commencement Mode to an Imminent Peril Group Call and the MCVideo User being authorized for
cancelling a MCVideo Imminent Peril state (MCVideo In-Progress Imminent Peril Cancel) }
ensure that {
    when {the MCVideo User requests to cancel the ongoing MCVideo Imminent Peril state }
    then {the UE (MCVideo Client) sends a SIP re-INVITE request and upon receipt of a SIP 2xx
response considers the Imminent Peril condition cancelled, and notifies the user }
    }

```

(9)

```

with {the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
    when {the MCVideo User requests to terminate the ongoing MCVideo Group Call}
    then {the UE (MCVideo Client) sends a Transmission End Request, acknowledges the Transmission
End Response from the SS (MCVideo Server), and sends a SIP BYE message, and leaves the MCVideo
Session }
    }

```

6.1.1.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in TS 24.281, clauses 6.2.3.1.2, 6.2.3.1.1, 9.2.1.2.1.1, 9.2.1.2.1.3, 9.2.1.2.1.4, 9.2.1.2.1.5, 9.2.1.2.1.6, 9.2.1.3.3.1, 9.2.1.4.7, 9.2.1.4.8; and TS 24.581, clauses 6.2.4.4.6, 6.3.4.3.6, 6.3.4.4.12, 6.3.5.3.9, 6.3.5.4.8. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 6.2.3.1.2]

When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in subclause 6.2.3.1.1 with the following clarification:

- The MCVideo client may include a P-Answer-State header field with the value "Confirmed" as specified in IETF RFC 4964 [30] in the SIP 200 (OK) response.

[TS 24.281, clause 6.2.3.1.1]

When performing the automatic commencement mode procedures, the MCVideo client:

- 1) shall accept the SIP INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];

- 2) shall include the option tag "timer" in a Require header field of the SIP 200 (OK) response;
- 3) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 4) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 5) shall include the Session-Expires header field in the SIP 200 (OK) response and start the SIP session timer according to IETF RFC 4028 [23]. The "refresher" parameter in the Session-Expires header field shall be set to "uas";
- 6) shall, if the incoming SIP INVITE request contains a Replaces header field, include in the SDP answer in the SIP 200 (OK) response to the SDP offer the parameters used for the pre-established session identified by the contents of the Replaces header field;
- 7) shall, if the incoming SIP INVITE request does not contain a Replaces header field, include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;

NOTE: In the case of a new emergency call where the terminating client is using a pre-established session, the SIP INVITE request containing a Replaces header is used to replace the pre-established session.

- 8) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11];
- 9) shall, if the incoming SIP INVITE request contains a Replaces header field, release the pre-established session identified by the contents of the Replaces header field; and
- 10) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this subclause and as specified in IETF RFC 5626 [35].

[TS 24.281, clause 9.2.1.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo prearranged group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;
- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

- 8) should include the "timer" option tag in the Supported header field;
- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 12) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2;
- 13) if the MCVideo client imminent peril group state for this group is set to "MVIG 2: in-progress" or "MVIG 4: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "prearranged";
 - b) the <mcvideo-request-uri> element set to the group identity;
 - c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.

- d) if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;

NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.

NOTE 4: The MCVideo client is informed about temporary groups and regrouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].

NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.

- 15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.1;
- 16) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]
- 2) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in subclause 6.2.8.1.4; and
- 3) may subscribe to the conference event package as specified in subclause 9.1.3.1.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or
- 2) if the MCVideo imminent peril group call state is set to "MVIC 2: imminent-peril-call-requested" or "MVIC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13

[TS 24.281, clause 9.2.1.2.1.3]

This subclause covers both on-demand session.

Upon receiving a request from an MCVideo user to upgrade the MCVideo group session to an emergency condition or an imminent peril condition on an MCVideo prearranged group, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [11], with the clarifications given below.

- 1) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress emergency group state and this is an unauthorized request for an MCVideo emergency call as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorized to upgrade the MCVideo group session to an in-progress emergency group state; and
 - b) shall skip the remaining steps of the current subclause;
- 2) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress imminent peril state and this is an unauthorized request for an MCVideo imminent peril group call as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorized to upgrade the MCVideo group session to an in-progress imminent peril group state; and
 - b) shall skip the remaining steps of the current subclause;
- 3) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo emergency call, the MCVideo client:
 - a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.1;
 - b) if an indication of an MCVideo emergency alert is to be included, shall perform the procedures specified in subclause 6.2.9.1 for the MCVideo emergency alert trigger; and
 - c) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2.
- 4) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo imminent peril call, the MCVideo client:
 - a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.9; and
 - b) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 5) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1;
- 6) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and

2) shall perform the actions specified in subclause 6.2.8.1.4.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13.

On receiving a SIP 4xx response, SIP 5xx response or a SIP 6xx response to the SIP re-INVITE request the MCVideo client shall perform the actions specified in subclause 6.2.8.1.5.

[TS 24.281, clause 9.2.1.2.1.4]

This subclause covers both on-demand session and pre-established sessions.

Upon receiving a request from an MCVideo user to cancel the in-progress emergency condition on a prearranged MCVideo group, the MCVideo client shall generate a SIP re-INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user is not authorized to cancel the in-progress emergency group state of the MCVideo group as determined by the procedures of subclause 6.2.8.1.7, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorized to cancel the in-progress emergency group state of the MCVideo group; and
 - b) shall skip the remaining steps of the current subclause;
- 2) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by the MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.3;
- 3) shall, if the MCVideo user is cancelling an in-progress emergency condition and an MCVideo emergency alert originated by another MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.14;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "prearranged"; and
 - b) the <mcvideo-request-uri> element set to the group identity;

NOTE 1: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP INVITE request that is sent by the originating participating MCVideo function.

- 5) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP re-INVITE request according to IETF RFC 3840 [22];
- 6) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [51] with the clarifications specified in subclause 6.2.1;
- 7) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2; and
- 8) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5];
- 2) shall set the MCVideo emergency group state of the group to "MVEG 1: no-emergency";
- 3) shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable"; and
- 4) if the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending", the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the SIP 2xx response to the SIP request for a priority group call does not contain a Warning header field as specified in subclause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall set the MCVideo emergency alert state to "MVEA 1: no-alert".

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

- 1) shall set the MCVideo emergency group state as "MVEG 2: in-progress";
- 2) if the SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element set to a value of "true" and the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and
- 3) if the SIP 4xx response, SIP 5xx response or SIP 6xx response did not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element and did not contain an <originated-by> element, the MCVideo emergency alert (MVEA) state shall revert to its value prior to entering the current procedure.

NOTE 3: If the in-progress emergency group state cancel request is rejected, the state of the session does not change, i.e. continues with MCVideo emergency group call level priority.

[TS 24.281, clause 9.2.1.2.1.5]

This subclause covers on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress imminent peril condition on a prearranged MCVideo group, the MCVideo client shall generate a SIP re-INVITE request by following the procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user is not authorized to cancel the in-progress imminent peril group state of the MCVideo group as determined by the procedures of subclause 6.2.8.1.10, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorized to cancel the in-progress imminent peril group state of the MCVideo group; and
 - b) shall skip the remaining steps of the current subclause;
- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.11; and
- 3) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "prearranged"; and
 - b) the <mcvideo-request-uri> element set to the group identity;

NOTE 1: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP re-INVITE request that is sent by the originating participating MCVideo function.

- 5) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP re-INVITE request according to IETF RFC 3840 [22];
- 6) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1; and
- 7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5];
- 2) shall set the MCVideo imminent peril group state of the group to "MVI 1: no-imminent-peril"; and

3) shall set the MCVideo imminent peril group call state of the group to "MVIGC 1: imminent-peril-gc-capable".

On receiving a SIP 4xx, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

- 1) if the SIP 4xx response, SIP 5xx response or SIP 6xx response:
 - a) contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <imminentperil-ind> element set to a value of "true"; or
 - b) does not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <imminentperil-ind> element;

then the MCVideo client shall set the MCVideo imminent peril group state as "MVIIG 2: in-progress".

NOTE 3: This is the case where the MCVideo client requested the cancellation of the MCVideo imminent peril in-progress state and was rejected.

[TS 24.281, clause 9.2.1.2.1.6]

This subclause covers both on-demand session.

Upon receipt of a SIP re-INVITE request the MCVideo client:

- 1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo emergency group call and an indication that this is an MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - c) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - d) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and
 - e) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-gc-capable";
- 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call; and
 - b) shall set the MCVideo imminent peril group state to "MIG 2: in-progress";
- 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "false":
 - i) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and the MCVideo ID of the MCVideo user cancelling the MCVideo emergency alert; and
 - ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:
 - A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and

- B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user shall set the MCVideo emergency alert state to "MVEA 1: no-alert";
- c) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and
- d) if the MCVideo emergency group call state of the group is set to "MVEGC 3: emergency-call-granted", shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable";
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false":
- a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call;
- b) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
- c) shall set the MCVideo imminent peril group call state to "MVIIG 1: imminent-peril-gc-capable";
- 5) shall check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;
- 10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and
- 11) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 9.2.1.3.3.1]

Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in subclause 6.3.2.1.6.

[TS 24.281, clause 9.2.1.4.7]

In the procedures in this subclause:

- 1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a SIP re-INVITE request for an MCVideo session identity identifying an on-demand prearranged MCVideo group session, the controlling MCVideo function:

- 1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP re-INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

NOTE 1: If the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the controlling MCVideo function can choose to accept the request.

- 2) if received SIP re-INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in subclause 6.3.3.1.17;
- 3) if the received SIP re-INVITE request contains an unauthorized request for an MCVideo emergency call as determined by subclause 6.3.3.1.13.2:
 - a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response as specified in subclause 6.3.3.1.14; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 4) if the received SIP re-INVITE request contains an imminent peril indication set to "true" for an MCVideo imminent peril group call and this is an unauthorized request for an MCVideo imminent peril group call as determined by subclause 6.3.3.1.13.6, shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response with the following clarifications:
 - a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false"; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 5) if a Resource-Priority header field is included in the received SIP re-INVITE request:
 - a) if the Resource-Priority header field is set to the value indicated for emergency calls and the SIP re-INVITE request does not contain an emergency indication and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the rest of the steps; and
 - b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the SIP re-INVITE request does not contain an imminent peril indication and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response and skip the rest of the steps;
- 6) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true" and is an authorized request to initiate an MCVideo emergency group call as determined by subclause 6.3.3.1.13.2, the controlling MCVideo function shall:
 - i) shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency call;
 - ii) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorized request for an MCVideo emergency alert meeting the conditions specified in subclause 6.3.3.1.13.1, shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency alert;
 - iii) if the in-progress emergency state of the group is set to a value of "true":
 - A) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's emergency indication as specified in subclause 6.3.3.1.11, setting the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
 - C) if the in-progress imminent peril state of the group is set to a value of "true", shall set it to a value of "false"; and
 - iv) if the in-progress emergency state of the group is set to a value of "false":
 - A) shall set the value of the in-progress emergency state of the group to "true";
 - B) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in subclause 6.3.3.1.16;

NOTE 2: The interactions of TNG2 with the TNG3 (group call timer) are explained in subclause 6.3.3.5.2.

Editor's Note: timers need to be defined.

- C) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other participants of the MCVideo group call as specified in subclause 6.3.3.1.6;
 - D) shall send the SIP re-INVITEs towards the other participants of the MCVideo group call; and
 - E) upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 7) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is an unauthorized request for an MCVideo emergency group call cancellation as determined by subclause 6.3.3.1.13.4:
- a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response;
 - b) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <emergency-ind> element set to a value of "true";
 - c) if an <alert-ind> element of the mcvideoinfo MIME body is included in the SIP re-INVITE request set to "false", and there is an outstanding MCVideo emergency alert for this MCVideo user, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set to a value of "true"; and
 - d) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 8) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is determined to be an authorized request for an MCVideo emergency call cancellation as specified in subclause 6.3.3.1.16 and the in-progress emergency state of the group to is set to a value of "true" the controlling MCVideo function:
- a) shall set the in-progress emergency group state of the group to a value of "false";
 - b) shall clear the cache of the MCVideo ID of the MCVideo user as having an outstanding MCVideo emergency group call;
 - c) if an <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is included and set to "false" and is determined to be an authorized request for an MCVideo emergency alert cancellation as specified in subclause 6.3.3.1.13.3 and there is an outstanding MCVideo emergency alert for this MCVideo user shall:
 - i) if the received SIP re-INVITE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency alert; or
 - ii) if the received SIP re-INVITE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the sender of the SIP re-INVITE request as having an outstanding MCVideo emergency alert;
 - d) shall generate SIP re-INVITE requests to the participants in the group call as specified in subclause 6.3.3.1.6. The MCVideo controlling function:
 - i) for each of the other participants in the group call shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];

NOTE 3: Subclause 6.3.3.1.5 will inform the group call participants of the cancellation of the MCVideo group's in-progress emergency state and the cancellation of the MCVideo emergency alert if applicable.

- e) shall stop timer TNG2 (in-progress emergency group call timer); and

NOTE 4: The interactions of TNG2 with the TNG3 (group call timer) are explained in subclause 6.3.3.5.2;

- f) for each of the affiliated members of the group that are not participating in the call:
 - i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency call as specified in subclause 6.3.3.1.11;
 - ii) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";
 - iii) if indicated above in step 8) c), set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and
 - iv) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];
- 9) if the received SIP re-INVITE request contains an imminent peril indication and the in-progress emergency group state of the group is set to a value of "false", shall perform the procedures specified in subclause 9.2.1.4.8 and skip the rest of the steps.

Upon receiving a SIP 200 (OK) response to a SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];

- 1) shall generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 2) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.3.3.2.1;
- 3) shall include the "norefersub" option tag in a Supported header field according to IETF RFC 4488 [31];
- 4) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];
- 5) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and if this is an unauthorized request for an MCVideo emergency alert as determined by subclause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;
- 6) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false" and if this is an unauthorized request for an MCVideo emergency alert cancellation as determined by subclause 6.3.3.1.13.3, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;
- 7) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true", this is an authorized request for an MCVideo imminent peril group call and the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;

NOTE 5: In this case, the request was for an imminent peril call but a higher priority MCVideo emergency call was already in progress on the group. Hence, the imminent peril call request aspect of the request is denied but the request is granted with emergency level priority.

- 8) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and
- 9) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, and the SIP 200 (OK) response was sent with the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4, the controlling MCVideo function shall follow the procedures in subclause 6.3.3.1.18.

Upon receipt of a SIP 2xx response for an outgoing SIP MESSAGE request, shall handle according to 3GPP TS 24.229 [11].

[TS 24.281, clause 9.2.1.4.8]

This procedure is initiated by the controlling MCVideo function as the result of an action in subclause 9.2.1.4.7.

In the procedures in this subclause:

- 1) imminent peril indication in an incoming SIP re-INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

When the controlling function receives a SIP re-INVITE request with an imminent peril indication set to "true", the controlling function:

- 1) if the in-progress emergency state of the group is set to a value of "false" and if the SIP re-INVITE request contains an imminent peril indication set to a value of "true" or the in-progress imminent peril state of the group to "true", the controlling MCVideo function shall:

NOTE: 1 The calling procedure has already determined that this is not an unauthorized request for an MCVideo imminent peril call, therefore that check does not need to be repeated in the current procedure.

- a) if the in-progress imminent peril state of the group is set to a value of "true" and this MCVideo user is indicating a new imminent peril indication:
 - i) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in subclause 6.3.3.1.11 with the following clarifications;
 - A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];
 - b) if the in-progress imminent peril state of the group is set to a value of "false";
 - i) set the value of the in-progress imminent peril state of the group to "true";
 - ii) generate SIP re-INVITE requests for the MCVideo imminent peril group call to participants in the MCVideo group call as specified in subclause 6.3.3.1.15;
 - iii) send the SIP re-INVITES to all of the other participants in the MCVideo group call;
 - iv) for each of the affiliated members of the group not participating in the group call, generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in subclause 6.3.3.1.11 with the following clarifications;
 - A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
 - c) cache the information that this MCVideo user has initiated an MCVideo imminent peril call;
 - 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is an unauthorized request for an MCVideo imminent peril group call cancellation as determined by subclause 6.3.3.1.13.6 shall:
 - a) reject the SIP re-INVITE request with a SIP 403 (Forbidden) response to the SIP re-INVITE request; and
 - b) include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false";
 - c) send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11]; and
 - d) skip the rest of the steps;
 - 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is determined to be an authorized request for an MCVideo imminent peril call cancellation as specified in subclause 6.3.3.1.13.6 and the in-progress imminent peril state of the group to is set to a value of "true" the controlling MCVideo function shall:
 - a) set the in-progress imminent peril state of the group to a value of "false";

- b) cache the information that this MCVideo user no longer has an outstanding MCVideo imminent peril group call;
- c) generate SIP re-INVITES requests to the other participants in the MCVideo group call as specified in subclause 6.3.3.1.15. The MCVideo controlling function:
 - i) for each participant shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 2: Subclause 6.3.3.1.14 will inform the affiliated and joined members of the cancellation of the MCVideo group's in-progress emergency state and the cancellation of the MCVideo emergency alert if applicable.

- d) for each of the affiliated members of the group not participating in the call shall:
 - i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's imminent peril call as specified in subclause 6.3.3.1.11;
 - ii) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and
 - iii) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];
- 4) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.3.3.2.1;
- 5) shall include the "norefersub" option tag in a Supported header field according to IETF RFC 4488 [31];
- 6) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];
- 7) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and
- 8) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response for an outgoing SIP MESSAGE request, shall handle according to 3GPP TS 24.229 [11].

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.3.4.3.6]

Upon receiving an implicit Transmission request due to an upgrade to an emergency group call or due to an upgrade to imminent peril call, the transmission control arbitration logic in the transmission control server:

1. shall reject the request if there is only one MCVideo client in the MCVideo call;

2. if the Transmission request is rejected the transmission control server:
 - a. shall send the Transmission Reject message. The Transmission Reject message:
 - i. shall include in the Reject Cause field the <Reject Cause> value cause #3 (Only one participant); and
 - ii. may include in the Reject Cause field an additional text string explaining the reason for rejecting the Transmission request in the <Reject Phrase> value; and
 - b. shall remain in the 'G: Transmit Idle' state; and
3. if the Transmission request is granted the transmission control server:
 - a. shall stop the timer T1 (Inactivity);
 - b. shall stop the timer T2 (Transmit Idle);
 - c. shall store the SSRC of transmission participant granted the permission to send media until the transmission is released associated to that Transmission request; and
 - d. shall enter the 'G: Transmit Taken' state as specified in the subclause 6.3.4.4.2.

[TS 24.581, clause 6.3.4.4.12]

Upon receiving an implicit Transmission request due to an upgrade to an emergency group call or due to an upgrade to imminent peril call, the transmission control arbitration logic in the transmission control server:

1. if counter Cx (Simultaneous transmission video) has not reached its upper limit:
 - a. shall perform the actions specified in the subclause 6.3.4.4.2;
2. if counter Cx (Simultaneous transmission video) has reached its upper limit:
 - a. select one of the transmission participants with permission to send media without the pre-emptive priority or low effective priority;
 - b. shall stop timer T4 (Transmission Grant), if running;
 - c. shall set the Reject Cause field in the Transmission Revoke message to #4 (Media Transmission pre-empted);
 - d. shall enter the 'G: pending Transmission Revoke' state as specified in the subclause 6.3.4.5.2;
 - e. shall insert the transmission participant into the active Transmission request queue to the position in front of all queued requests, if not inserted yet or update the position of the transmission participant in the active Transmission request queue to the position in front of all other queued requests, if already inserted; and
 - f. shall send a Transmission Queue Position Info message to the requesting transmission participant, if negotiated support of queueing Transmission requests as specified in clause 14. The Queue Position Request message:
 - i. shall include the queue position and transmission priority in the Queue Info field; and
 - ii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Transmission Indicator field with appropriate indications.

[TS 24.581, clause 6.3.5.3.9]

When an ongoing session is upgraded to an emergency group call and when the application and signalling plane indicates that a subsequent SDP offer included the "mc_implicit_request" fntp attribute as described in clause 14, the transmission control interface towards the MCVideo client in the transmission control server:

1. shall indicate to the transmission control server arbitration logic that an implicit Transmission request is received due to an upgrade to an emergency group call; and
2. shall remain in the 'U: not permitted and Transmit Idle' state.

[TS 24.581, clause 6.3.5.4.8]

When an ongoing session is upgraded to an emergency group call and when the application and signalling plane indicates that a subsequent SDP offer included the "mc_implicit_request" fmtp attribute as specified in clause 14, the transmission control interface towards the MCVideo client in the transmission control server:

1. shall indicate to the transmission control server arbitration logic that an implicit Transmission request is received due to an upgrade to an emergency group call; and
2. shall remain in the 'U: not permitted and Transmit Taken' state.

6.1.1.1.3 Test description

6.1.1.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.1.3.2 Test procedure sequence

Table 6.1.1.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a group call with automatic commencement mode and implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a group call with automatic commencement mode and implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1, 2	P
3-7	Void	-	-	-	-
8	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	1	P
8A	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
8B	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	2	P
9	Make the UE (MCVideo client) request upgrade of the call to an emergency group call with implicit transmission request. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session modification' as described in TS 37.579-1 [2] Table 5.3B.11.3-1 to upgrade the call to an emergency group call with implicit transmit media request?	-	-	3, 4	P
11-15	Void	-	-	-	-
16	Check: Does the UE (MCVideo client) notify the user that the call has been upgraded to an emergency group call? (NOTE 1)	-	-	3	P
16A	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
16B	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	4	P
17	Make the UE (MCVideo client) request downgrade of the call to a normal group call. (NOTE 1)	-	-	-	-
18	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session modification' as described in TS 37.579-1 [2] Table 5.3B.11.3-1 to downgrade the call without implicit transmit media request?	-	-	5, 2	P
19-23	Void	-	-	-	-
24	Check: Does the UE (MCVideo client) notify the user that the call has been downgraded? (NOTE 1)	-	-	5	P
24A-24B	Void	-	-	-	-
25	Make the UE (MCVideo client) request upgrade of the call to an imminent peril group call with implicit transmission request. (NOTE 1)	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
26	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session modification' as described in TS 37.579-1 [2] Table 5.3B.11.3-1 to upgrade the call to an imminent peril call with implicit transmit media request?	-	-	6, 7	P
27-31	Void	-	-	-	-
32	Check: Does the UE (MCVideo client) notify the user that the call has been upgraded to an imminent peril group call? (NOTE 1)	-	-	6	P
32A	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
32B	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	4	P
33	Make the UE (MCVideo client) request downgrade of the call to a normal group call. (NOTE 1)	-	-	-	-
34	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session modification' as described in TS 37.579-1 [2] Table 5.3B.11.3-1 to downgrade the call without implicit transmit media request?	-	-	8, 2	P
35-39	Void	-	-	-	-
40	Check: Does the UE (MCVideo client) notify the user that the call has been downgraded? (NOTE 1)	-	-	8	P
41-45	Void	-	-	-	-
46	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
47	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	9	P
48	Void	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.1.1.1.3.3 Specific message contents

Table 6.1.1.1.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.1.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.1.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.1.3.3-2			

Table 6.1.1.1.3.3-1A: SDP message in SIP INVITE (Table 6.1.1.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.1.1.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, INVITE_REFERER

Table 6.1.1.1.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.1.1.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.1.1.1.3.3-3A			

Table 6.1.1.1.3.3-3A: SDP message in SIP 200 (OK) (Table 6.1.1.1.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.1.1.3.3-4..5: Void**Table 6.1.1.1.3.3-6: SIP INVITE from the UE (Step 10, Table 6.1.1.1.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.11.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition EMERGENCY-CALL, re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.1.3.3-6A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.1.3.3-7			

Table 6.1.1.1.3.3-6A: SDP message in SIP INVITE (Table 6.1.1.1.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.1.1.3.3-7: MCVideo-Info in SIP INVITE (Table 6.1.1.1.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, EMERGENCY-CALL, INVITE_REFERER

Table 6.1.1.1.3.3-8: SIP 200 (OK) from the SS (Steps 10, 26, Table 6.1.1.1.3.2-1; step 3, TS 37.579-1 [2] Table 5.3B.11.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.1.1.1.3.3-8A			

Table 6.1.1.1.3.3-8A: SDP message in SIP 200 (OK) (Table 6.1.1.1.3.3-8)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.1.1.3.3-9: Transmission Granted from the SS (Step 10, Table 6.1.1.1.3.2-1; Step 5a1, TS 37.579-1 [2] Table 5.3B.11.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition ACK, EMERGENCY-CALL

Table 6.1.1.1.3.3-9A: Transmission Idle from the SS (Step 16B, Table 6.1.1.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.7.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition EMERGENCY-CALL

Table 6.1.1.1.3.3-10: SIP INVITE from the UE (Step 18, Table 6.1.1.1.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.11.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition re_INVITE

Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.1.3.3-10A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.1.3.3-11			

Table 6.1.1.1.3.3-10A: SDP message in SIP INVITE (Table 6.1.1.1.3.3-10)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_OFFER

Table 6.1.1.1.3.3-11: MCVideo-Info in SIP INVITE (Table 6.1.1.1.3.3-10)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, INVITE_REFERER

Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
emergency-ind	Encrypted <emergency-ind> with mcvideoBoolean set to false	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.2.1-2		

Table 6.1.1.1.3.3-11A: SIP 200 (OK) from the SS (Steps 18, 34, Table 6.1.1.1.3.2-1; step 3, TS 37.579-1 [2] Table 5.3B.11.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP

Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.1.1.1.3.3-11B			

Table 6.1.1.1.3.3-11B: SDP message in SIP 200 (OK) (Table 6.1.1.1.3.3-11A)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER

**Table 6.1.1.1.3.3-12: SIP INVITE from the UE (Step 26, Table 6.1.1.1.3.2-1;
Step 1, TS 37.579-1 [2] Table 5.3B.11.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition IMPERIL-CALL, re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.1.3.3-12A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.1.3.3-13			

Table 6.1.1.1.3.3-12A: SDP message in SIP INVITE (Table 6.1.1.1.3.3-12)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.1.1.3.3-13: MCVideo-Info in SIP INVITE (Table 6.1.1.1.3.3-12)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, IMPERIL-CALL, INVITE_REFERER

Table 6.1.1.1.3.3-14: Void

**Table 6.1.1.1.3.3-15: Transmission Granted from the SS (Step 26, Table 6.1.1.1.3.2-1;
Step 5a1, TS 37.579-1 [2] Table 5.3B.11.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition ACK, IMPERIL-CALL

**Table 6.1.1.1.3.3-15A: Transmission Idle from the SS (Step 32B, Table 6.1.1.1.3.2-1;
Step 4, TS 37.579-1 [2] Table 5.3B.7.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition IMPERIL-CALL

Table 6.1.1.1.3.3-16..17: Void

**Table 6.1.1.1.3.3-17A: SIP INVITE from the UE (Step 34, Table 6.1.1.1.3.2-1;
Step 1, TS 37.579-1 [2] Table 5.3B.11.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.1.3.3-17B			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.1.3.3-17C			

Table 6.1.1.1.3.3-17B: SDP message in SIP INVITE (Table 6.1.1.1.3.3-17A)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_OFFER
--

Table 6.1.1.1.3.3-17C: MCVideo-Info in SIP INVITE (Table 6.1.1.1.3.3-17A)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, INVITE_REFERER				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
imminentperil-ind	Encrypted <imminentperil-ind> with mcvideoBoolean set to false	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.2.1-2		

Table 6.1.1.1.3.3-18..19: Void

6.1.1.2 On-network / On-demand Pre-arranged Group Call / Automatic Commencement Mode / Reception Control / Upgrade to Emergency Group Call / Cancel Emergency State / Upgrade to Imminent Peril Group Call / Cancel Imminent Peril State / Client Terminated (CT)

6.1.1.2.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE from the SS (MCVideo Server) to initiate an
On-demand Pre-arranged Group Call with Automatic Commencement Mode and implicit Reception Control }
  then { the UE (MCVideo Client) responds by sending a SIP 200 (OK) }
}
```

(2)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode}
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) }
  then { the UE (MCVideo Client) provides media transmission notification to the MCVideo User }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the MCVideo User requests permission to receive media }
  then { The UE (MCVideo Client) sends a Receive Media Request message to the SS (MCVideo Server)
and notifies the MCVideo User of the successful Receive Media Request upon receipt of a Receive
Media Response message from the SS (MCVideo Server) and respects the Reception Control imposed by
the SS (MCVideo Server) (Media Transmission Notification, Receive Media Request, Receive Media
Response, Media Reception End Request, Media Reception End Response) }
}
```

(4)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a SIP re-INVITE from the SS (MCVideo Server) to upgrade
the ongoing MCVideo Group Call to a MCVideo Emergency Group Call with Reception Control }
  then { the UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) and
considers the call as being upgraded to an Emergency Group) }
}
```

(5)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode that was upgraded to an Emergency Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a SIP re-INVITE from the SS (MCVideo Server) to cancel the
ongoing MCVideo Emergency state }
  then { the UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) and
considers the emergency state cancelled }
}

```

(6)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a SIP re-INVITE from the SS (MCVideo Server) to upgrade the
ongoing MCVideo Group Call to a MCVideo Imminent Peril Group Call with Reception Control }
  then { the UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK)
response and considers the call as being upgraded to an Imminent Peril Group Call }
}

```

(7)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode that was upgraded to an Imminent Peril Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a SIP re-INVITE from the SS (MCVideo Server) to cancel the
ongoing MCVideo Imminent Peril state }
  then { the UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) and
considers the Imminent Peril state cancelled }
}

```

(8)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the MCVideo User requests to end the RTP media reception }
  then { the UE (MCVideo Client) sends a Media Reception End Request message }
}

```

(9)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a SIP BYE message }
  then { the UE (MCVideo Client) sends a SIP 200 (OK) message and leaves the MCVideo session }
}

```

6.1.1.2.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in: TS 24.281, clauses 6.2.3.1.1, 6.2.3.1.2, 9.2.1.2.1.2, 9.2.1.2.1.4, 9.2.1.2.1.6, ; also TS 24.581, clauses 6.3.4.3.6, 6.3.4.4.12, 6.3.5.3.9, 6.3.5.4.8. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 6.2.3.1.1]

When performing the automatic commencement mode procedures, the MCVideo client:

- 1) shall accept the SIP INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 2) shall include the option tag "timer" in a Require header field of the SIP 200 (OK) response;
- 3) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;

- 4) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 5) shall include the Session-Expires header field in the SIP 200 (OK) response and start the SIP session timer according to IETF RFC 4028 [23]. The "refresher" parameter in the Session-Expires header field shall be set to "uas";
- 6) shall, if the incoming SIP INVITE request contains a Replaces header field, include in the SDP answer in the SIP 200 (OK) response to the SDP offer the parameters used for the pre-established session identified by the contents of the Replaces header field;
- 7) shall, if the incoming SIP INVITE request does not contain a Replaces header field, include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;

NOTE: In the case of a new emergency call where the terminating client is using a pre-established session, the SIP INVITE request containing a Replaces header is used to replace the pre-established session.

- 8) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11];
- 9) shall, if the incoming SIP INVITE request contains a Replaces header field, release the pre-established session identified by the contents of the Replaces header field; and
- 10) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this subclause and as specified in IETF RFC 5626 [35].

[TS 24.281, clause 6.2.3.1.2]

When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in subclause 6.2.3.1.1 with the following clarification:

- The MCVideo client may include a P-Answer-State header field with the value "Confirmed" as specified in IETF RFC 4964 [30] in the SIP 200 (OK) response.

[TS 24.281, clause 9.2.1.2.1.2]

In the procedures in this subclause:

- 1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if either of the following conditions are met:
 - a) MCVideo client does not have enough resources to handle the call; or
 - b) any other reason outside the scope of this specification;
- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [51] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure and skip the rest of the steps of this subclause;

NOTE: If the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.

- 3) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element; and
 - iii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - b) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - c) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
 - d) shall set the MCVideo imminent peril group call state to "MVIIGC 1: imminent-peril-gc-capable"; otherwise
- 5) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo imminent peril group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo imminent peril group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) should display the MCVideo group identity of the group with the imminent peril condition contained in the <mcvideo-calling-group-id> element; and
 - b) shall set the MCVideo imminent peril group state to "MVIIG 2: in-progress";
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.2 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client allows the call to be answered with automatic commencement mode;
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.2 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is to use manual commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; and
- 9) when the SIP 200 (OK) response to the SIP INVITE request is sent, may subscribe to the conference event package as specified in subclause 9.1.3.1.

[TS 24.281, clause 9.2.1.2.1.4]

This subclause covers both on-demand session and pre-established sessions.

Upon receiving a request from an MCVideo user to cancel the in-progress emergency condition on a prearranged MCVideo group, the MCVideo client shall generate a SIP re-INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user is not authorised to cancel the in-progress emergency group state of the MCVideo group as determined by the procedures of subclause 6.2.8.1.7, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress emergency group state of the MCVideo group; and
 - b) shall skip the remaining steps of the current subclause;

...

[TS 24.281, clause 9.2.1.2.1.6]

This subclause covers both on-demand session.

Upon receipt of a SIP re-INVITE request the MCVideo client:

- 1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo emergency group call and an indication that this is an MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - c) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - d) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and
 - e) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-gc-capable";
- 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call; and
 - b) shall set the MCVideo imminent peril group state to "MIG 2: in-progress";
- 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "false":
 - i) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and the MCVideo ID of the MCVideo user cancelling the MCVideo emergency alert; and
 - ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:

- A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and
 - B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user shall set the MCVideo emergency alert state to "MVEA 1: no-alert";
 - c) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and
 - d) if the MCVideo emergency group call state of the group is set to "MVEGC 3: emergency-call-granted", shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable";
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false":
- a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call;
 - b) shall set the MCVideo imminent peril group state to "MVIC 1: no-imminent-peril"; and
 - c) shall set the MCVideo imminent peril group call state to "MVIC 1: imminent-peril-gc-capable";
- 5) shall check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;
- 10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and
- 11) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.581, Clause 6.3.4.3.6]

Upon receiving an implicit Transmission request due to an upgrade to an emergency group call or due to an upgrade to imminent peril call, the transmission control arbitration logic in the transmission control server:

1. shall reject the request if there is only one MCVideo client in the MCVideo call;
2. if the Transmission request is rejected the transmission control server:
 - a. shall send the Transmission Reject message. The Transmission Reject message:
 - i. shall include in the Reject Cause field the <Reject Cause> value cause #3 (Only one participant); and
 - ii. may include in the Reject Cause field an additional text string explaining the reason for rejecting the Transmission request in the <Reject Phrase> value; and
 - b. shall remain in the 'G: Transmit Idle' state; and
3. if the Transmission request is granted the transmission control server:
 - a. shall stop the timer T1 (Inactivity);

- b. shall stop the timer T2 (Transmit Idle);
- c. shall store the SSRC of transmission participant granted the permission to send media until the transmission is released associated to that Transmission request; and
- d. shall enter the 'G: Transmit Taken' state as specified in the subclause 6.3.4.4.2.

[TS 24.581, clause 6.3.4.4.12]

Upon receiving an implicit Transmission request due to an upgrade to an emergency group call or due to an upgrade to imminent peril call, the transmission control arbitration logic in the transmission control server:

1. if counter Cx (Simultaneous transmission video) has not reached its upper limit:
 - a. shall perform the actions specified in the subclause 6.3.4.4.2;
2. if counter Cx (Simultaneous transmission video) has reached its upper limit:
 - a. select one of the transmission participants with permission to send media without the pre-emptive priority or low effective priority;
 - b. shall stop timer T4 (Transmission Grant), if running;
 - c. shall set the Reject Cause field in the Transmission Revoke message to #4 (Media Transmission pre-empted);
 - d. shall enter the 'G: pending Transmission Revoke' state as specified in the subclause 6.3.4.5.2;
 - e. shall insert the transmission participant into the active Transmission request queue to the position in front of all queued requests, if not inserted yet or update the position of the transmission participant in the active Transmission request queue to the position in front of all other queued requests, if already inserted; and
 - f. shall send a Transmission Queue Position Info message to the requesting transmission participant, if negotiated support of queueing Transmission requests as specified in clause 14. The Queue Position Request message:
 - i. shall include the queue position and transmission priority in the Queue Info field; and
 - ii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Transmission Indicator field with appropriate indications.

[TS 24.581, clause 6.3.5.3.9]

When an ongoing session is upgraded to an emergency group call and when the application and signalling plane indicates that a subsequent SDP offer included the "mc_implicit_request" fntp attribute as described in clause 14, the transmission control interface towards the MCVideo client in the transmission control server:

1. shall indicate to the transmission control server arbitration logic that an implicit Transmission request is received due to an upgrade to an emergency group call; and
2. shall remain in the 'U: not permitted and Transmit Idle' state.

[TS 24.581, clause 6.3.5.4.8]

When an ongoing session is upgraded to an emergency group call and when the application and signalling plane indicates that a subsequent SDP offer included the "mc_implicit_request" fntp attribute as specified in clause 14, the transmission control interface towards the MCVideo client in the transmission control server:

1. shall indicate to the transmission control server arbitration logic that an implicit Transmission request is received due to an upgrade to an emergency group call; and
2. shall remain in the 'U: not permitted and Transmit Taken' state.

6.1.1.2.3 Test description

6.1.1.2.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.2.3.2 Test procedure sequence

Table 6.1.1.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish a group call with automatic commencement mode?	-	-	1	P
2-4	Void	-	-	-	-
5	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2	P
5A-8	Void	-	-	-	-
9	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	3	P
9A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	3	P
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to upgrade the the call to an emergency group call?	-	-	4	P
11-13	Void	-	-	-	-
14	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2, 3	P
14A-17	Void	-	-	-	-
18	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	3	P
18A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	3	P
19	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to downgrade the call?	-	-	5	P
20-22	Void	-	-	-	-
23	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2, 3	P
23A-26	Void	-	-	-	-
27	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	2	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
27A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	3	P
28	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to upgrade the call to an imminent peril group call?	-	-	6	P
29-31	Void	-	-	-	-
32	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2, 3	P
33-35	Void	-	-	-	-
36	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	3	P
36A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	3	P
37	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to downgrade the call?	-	-	7	P
38-40	Void	-	-	-	-
41	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2, 3	P
41A-44	Void	-	-	-	-
45	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	3	P
46	Make the UE (MCVideo client) request end of reception. (NOTE 1)	-	-	-	-
47	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CO' as described in TS 37.579-1 [2] Table 5.3B.8.3-1?	-	-	8	P
48-49	Void	-	-	-	-
50	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT call release' as described in TS 37.579-1 [2] Table 5.3.12.3-1?	-	-	9	P
51	Void	-	-	-	-

NOTE: This is expected to be done via a suitable implementation dependent MMI.

6.1.1.2.3.3 Specific message contents

Table 6.1.1.2.3.3-1: SIP INVITE from the SS (Step 1, Table 6.1.1.2.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.2.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.2.3.3-2			

Table 6.1.1.2.3.3-1A: SDP in SIP INVITE (Table 6.1.1.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER
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Table 6.1.1.2.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP_CALL

Table 6.1.1.2.3.3-3: SIP 200 (OK) from the UE (Steps 1, 10, 19, 28, 37, Table 6.1.1.2.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.2.3.3-3A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.2.3.3-3B			

Table 6.1.1.2.3.3-3A: SDP in SIP 200 (OK) (Table 6.1.1.2.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.1.1.2.3.3-3B: MCVideo-Info in SIP 200 (OK) (Table 6.1.1.2.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

**Table 6.1.1.2.3.3-4: SIP INVITE from the SS (Step 10, Table 6.1.1.2.3.2-1;
Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.2.3.3-4A			
MIME body part		MCVideo-Info		
MIME part body	MCVideo-Info as described in Table 6.1.1.2.3.3-4B			

**Table 6.1.1.2.3.3-4A: SDP in SIP INVITE
(Table 6.1.1.2.3.3-4, 6.1.1.2.3.3-11, 6.1.1.2.3.3-12, 6.1.1.2.3.3-21)**

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_OFFER
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Table 6.1.1.2.3.3-4B: MCVideo-Info in SIP INVITE (Table 6.1.1.2.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP CALL, EMERGENCY-CALL

Table 6.1.1.2.3.3-5..9: Void

**Table 6.1.1.2.3.3-9A: Media Transmission Notification from the SS (Step 14, Table 6.1.1.2.3.2-1;
Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition EMERGENCY-CALL
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Table 6.1.1.2.3.3-9B..10: Void

**Table 6.1.1.2.3.3-10A: Media Reception End Request from the SS (Step 18A, Table 6.1.1.2.3.2-1;
Step 1, TS 37.579-1 [2] Table 5.3B.10.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.3-1, condition DOWNLINK, EMERGENCY-CALL
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**Table 6.1.1.2.3.3-10B: Transmission Idle from the SS (Step 18A, Table 6.1.1.2.3.2-1;
Step 4, TS 37.579-1 [2] Table 5.3B.10.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition EMERGENCY-CALL

**Table 6.1.1.2.3.3-11: SIP INVITE from the SS (Step 19, Table 6.1.1.2.3.2-1;
Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.2.3.3-4A			
MIME body part		MCVideo-Info		
MIME part body	MCVideo-Info as described in Table 6.1.1.2.3.3-11A			

Table 6.1.1.2.3.3-11A: MCVideo-Info in SIP INVITE (Table 6.1.1.2.3.3-11)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
emergency-ind	Encrypted <emergency-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
alert-ind	Encrypted <emergency-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		

Table 6.1.1.2.3.3-12: SIP INVITE from the SS (Step 28, Table 6.1.1.2.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.2.3.3-4A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.2.3.3-13			

Table 6.1.1.2.3.3-13: MCVideo-Info in SIP INVITE (Table 6.1.1.2.3.3-10)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL, IMPERIL-CALL

Table 6.1.1.2.3.3-14..15: Void**Table 6.1.1.2.3.3-15A: Media Transmission Notification from the SS (Step 32, Table 6.1.1.2.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition IMPERIL-CALL
--

Table 6.1.1.2.3.3-15B..16: Void**Table 6.1.1.2.3.3-16A: Media Reception End Request from the SS (Step 36A, Table 6.1.1.2.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.10.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.3-1, condition DOWNLINK, IMPERIL-CALL
--

Table 6.1.1.2.3.3-16B: Transmission Idle from the SS (Step 36A, Table 6.1.1.2.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition IMPERIL-CALL

Table 6.1.1.2.3.3-17..20: Void

Table 6.1.1.2.3.3-21: SIP INVITE from the SS (Step 37, Table 6.1.1.2.3.2-1;
Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.2.3.3-4A			
MIME body part		MCVideo-Info		
MCVideo-Info	As described in Table 6.1.1.2.3.3-22			

Table 6.1.1.2.3.3-22: MCVideo-Info in SIP INVITE (Table 6.1.1.2.3.3-21)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
imminentperil-ind	Encrypted <imminentperil-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		

6.1.1.3 On-network / On-demand Pre-arranged Group Call / Manual Commencement Mode / Client Originated (CO)

6.1.1.3.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo On-demand Pre-arranged Group Call
with Manual Commencement Mode and implicit Transmission Control }
  then { the UE (MCVideo Client) requests On-demand Manual Commencement Mode Pre-arranged Group
Call establishment with implicit Transmission Control by sending a SIP INVITE message }
}
```

(2)

```
with {the UE (MCVideo Client) having an ongoing MCVideo On-demand Pre-arranged Group Call with
Manual Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a Transmission Granted message from the SS (MCVideo Server
}
  then { the UE (MCVideo Client) provides transmission granted notification to the MCVideo User
and respects the Transmission Control imposed by the SS (MCVideo Server) ( Transmission Granted,
Transmission Control ACK, Transmission Idle, Transmission End Request, Transmission End Response }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Manual
Commencement Mode }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Group Call }
  then { the UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session }
}
```


6.1.1.3.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in: TS 24.281, clauses 9.2.1.2.1.1, 6.2.1, and 6.4; also TS 24.581, clauses 6.2.1, 6.2.2, 12.1.2.1, 12.1.2.2, 14.2.1, 14.2.4, and 14.2.5. . The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

...

- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;
- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];

...

- 14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

- a) the <session-type> element set to a value of "prearranged";
- b) the <mcvideo-request-uri> element set to the group identity;
- c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.

- d) if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;

NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.

NOTE 4: The MCVideo client is informed about temporary groups and regrouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].

NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.

15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.1;

16) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and

17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.581 [5];

[TS 24.281, clause 6.2.1]

The SDP offer shall contain two SDP media-level sections for MCVideo video media according to 3GPP TS 24.229 [11] and, if transmission control shall be used during the session, shall contain one SDP media-level section for a media- transmission control entity according to 3GPP TS 24.581 [5].

When composing an SDP offer according to 3GPP TS 24.229 [11] the MCVideo client:

1) shall set the IP address of the MCVideo client for the offered MCVideo video media stream and, if transmission control shall be used, for the offered media-transmission control entity;

NOTE: If the MCVideo client is behind a NAT the IP address and port included in the SDP offer can be a different IP address and port than the actual IP address and port of the MCVideo client depending on the NAT traversal method used by the SIP/IP Core.

2) shall include an "m=audio" media-level section for the MCVideo media stream consisting of:

a) the port number for the media stream selected; and

b) the codec(s) and media parameters and attributes with the following clarification:

i) if the MCVideo client is initiating a call to a group identity;

ii) if the <preferred-voice-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and

iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;

then the MCVideo client:

i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2]; and

c) "i=" field set to "audio component of MCVideo" according to 3GPP TS 24.229 [11];

3) shall include an "m=video" media-level section for the MCVideo media stream consisting of:

a) the port number for the media stream selected; and

b) the codec(s) and media parameters and attributes with the following clarification:

i) if the MCVideo client is initiating a call to a group identity;

ii) if the <preferred-video-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and

- iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;
then the MCVideo client:
- i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2]; and
 - c) "i=" field set to "video component of MCVideo" according to 3GPP TS 24.229 [11];
- 4) if transmission control shall be used during the session, shall include an "m=application" media-level section as specified in 3GPP TS 24.581 [5] clause 12 for a media-transmission control entity, consisting of:
- a) the port number for the media-transmission control entity selected as specified in 3GPP TS 24.581 [5]; and
 - b) the 'fmt' attributes as specified in 3GPP TS 24.581 [5] clause 14; and
- 5) if end-to-end security is required for a private call and the SDP offer is not for establishing a pre-established session, shall include the MIKEY-SAKKE I_MESSAGE in an "a=key-mgmt" attribute as a "mikey" attribute value in the SDP offer as specified in IETF RFC 4567 [34].

[TS 24.281, clause 6.4]

An initial SIP INVITE request fulfilling the following criteria shall be regarded by the MCVideo server as an implicit transmit media request by the originating MCVideo client when the MCVideo client:

- 1) initiates an MCVideo session; and
- 2) includes the "mc_implicit_request" 'fmt' attribute in the associated UDP stream for the transmission control in the SDP offer/answer as specified in 3GPP TS 24.581 [5] clause 12.

A SIP re-INVITE request fulfilling the following criteria shall be regarded by the MCVideo server as an implicit transmit media request when the MCVideo client:

- 1) performs an upgrade of:
 - a) an MCVideo group call to an emergency MCVideo group call;
 - b) an MCVideo group call to an imminent peril MCVideo group call; and
- 2) includes the "mc_implicit_request" 'fmt' attribute in the associated UDP stream for the transmission control in the SDP offer/answer as specified in 3GPP TS 24.581 [5] clause 12.

In all other cases the SIP (re-)INVITE request shall be regarded as received without an implicit transmit media request.

[TS 24.581, clause 6.2.1]

Based on the negotiations during the call establishment specified in 3GPP TS 24.281 [2], a new instance of the 'Transmission participant state transition diagram for basic transmission control operation', as specified in subclause 6.2.4 and a new instance of the 'Transmission participant state transition diagram for basic reception control operation' as specified in subclause 6.2.5, shall be created for this call.

The SIP INVITE request sent by the application and signalling plane:

1. shall be regarded an implicit Transmission request when an implicit Transmission request is negotiated; and
2. shall not be regarded as an implicit Transmission request in case of a rejoin to an already on-going group call.

NOTE: The transmission participant can negotiate the use of prioritization of the Transmission Media Request message. In that case, the transmission participant can request permission to send media at a priority level that is either the same as or lower than the highest priority that was permitted to the participant in the MCVideo call initialization. If a transmission participant is authorized for pre-emptive priority in the MCVideo call it is good practise to always request permission to send RTP media packets at a priority level that is lower than pre-emptive priority unless the user explicitly requests to pre-empt the current RTP media packets sender.

[TS 24.581, clause 6.2.2]

The MCVideo call release (whether it is initiated by the transmission participant or transmission control server) is a two-step procedure.

- Step 1 The transmission participant stops sending transmission control and reception control messages and the MCVideo client stops sending and receiving RTP media packets.
- Step 2 When the application and signalling plane has determined that the MCVideo call is released, the corresponding instance of the 'Transmission participant state transition diagram for basic transmission control operation' as specified in subclause 6.2.4 and the corresponding instance of the 'Transmission participant state transition diagram for basic reception control operation' as specified in subclause 6.2.5 are terminated and the transmission participant releases all the used resources.

The user plane can initiate the release step 1, but the application and signalling plane always initiates the release step 2.

[TS 24.581, clause 12.1.2.1]

This subclause defines the structure and syntax of the SDP "fntp" attribute, when used to negotiate an MCVideo media plane control channel. The MCVideo media plane control channel, and the protocols used on the control channel, is described in the present specification.

[TS 24.581, clause 12.1.2.2]

In an SDP offer and answer, the "mc_queueing" fntp attribute is used to indicate support of the Transmission Request message queueing mechanism, as defined in the present specification.

In an SDP offer, the "mc_priority" fntp attribute indicates (using an integer value between '1' and '255') the maximum transmission priority that the offerer requests to be used with Transmission Request messages sent by the offerer. In an SDP answer, the attribute parameter indicates the maximum priority level that the answerer has granted to the offerer. The value must be equal or less than the value provided in the associated SDP offer.

NOTE 1: If the "mc_priority" fntp attribute is not used within an SDP offer or answer, a default priority value is assumed.

In an SDP offer, the "mc_reception_priority" fntp attribute indicates (using an integer value between '1' and '255') the maximum reception priority that the offerer requests to be used with Reception Request messages sent by the offerer. In an SDP answer, the attribute parameter indicates the maximum reception priority level that the answerer has granted to the offerer. The value must be equal or less than the value provided in the associated SDP offer.

NOTE 2: If the "mc_reception_priority" fntp attribute is not used within an SDP offer or answer, a default reception priority value is assumed.

In an SDP offer, the "mc_granted" fntp attribute parameter indicates that the offerer supports the procedure where the answerer indicates, using the fntp attribute in the associated SDP answer, that the permission to transmit has been granted to the offerer.

NOTE 3: When the "mc_granted" fntp attribute is used in an SDP offer, it does not indicate an actual request for the media transmission. The SDP "mc_implicit_request" fntp attribute can be used to request the media transmission. In an SDP answer, the attribute indicates that the permission to Transmission has been granted to the offerer.

NOTE 4: Once the offerer has been granted the permission to Transmission, the offerer can perform media transmission until it receives a Transmission Revoked message, or until the offerer itself ends the media transmission by sending a Transmission end request message, as described in the present specification.

In an SDP offer, the "mc_implicit_request" fntp attribute indicates that the offerer implicitly requests for media transmission (without the need to send a Transmission Request message). In an SDP answer, the attribute parameter indicates that the answerer has accepted the implicit Transmission Request. Once the answerer grants the permission to Transmission to the offerer, the answerer will send a Transmission Granted message.

NOTE 5: The usage of the "mc_implicit_request" fntp attribute in an SDP answer does not mean that the answerer has granted the permission to Transmission to the offerer, only that the answerer has accepted the implicit Transmission Request.

[TS 24.581, clause 14.2.1]

When the offerer generates an SDP offer, in order to negotiate the establishment of a media plane control channel, the offerer shall include a media description ("m=" line) associated with the media plane control channel. In addition, the offerer may associate an SDP fmp attribute with the media description.

NOTE: "Initial offer" refers to the offer when the media plane control channel is initially negotiated. It might, or might not, be the initial offer within the session.

[TS 24.581, clause 14.2.4]

The MCVideo client shall include the "mc_granted" fmp attribute in the SDP offer of an initial SIP INVITE request when it is acceptable for the MCVideo client to receive a granted indication in the SIP 200 (OK) response to an initial INVITE request.

[TS 24.581, clause 14.2.5]

The MCVideo client shall include the "mc_implicit_request" fmp attribute when a SIP request shall be interpreted as an implicit Transmission request. If not explicitly stated in procedures in the present document or in procedures in 3GPP TS 24.281 [2] that the "mc_implicit_request" fmp attribute shall be included, the decision to include the "mc_implicit_request" fmp attribute or not, is an implementation option.

6.1.1.3.3 Test description

6.1.1.3.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.3.3.2 Test procedure sequence

Table 6.1.1.3.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a group call with manual commencement mode and implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a group call with manual commencement mode and implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1, 2	P
3-7	Void	-	-	-	-
8	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	2	P
9	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	2	P
11-14	Void	-	-	-	-
14A	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
15	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P
16	Void	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.1.1.3.3.3 Specific message contents

Table 6.1.1.3.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.1.3.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition MANUAL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.3.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.3.3.3-2			

Table 6.1.1.3.3.3-1A: SDP message in SIP INVITE (Table 6.1.1.3.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.1.3.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.3.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP_CALL, INVITE_REFER

Table 6.1.1.3.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.1.1.3.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	SDP Message as described in Table 6.1.1.3.3.3-3A			

Table 6.1.1.3.3.3-3A: SDP message in SIP 200 (OK) (Table 6.1.1.3.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.1.3.3.3-4..10: Void**6.1.1.4 On-network / On-demand Pre-arranged Group Call / Manual Commencement Mode / Client Terminated (CT)****6.1.1.4.1 Test Purpose (TP)**

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE from the SS (MCVideo Server) to initiate an
On-demand Pre-arranged group call with Manual Commencement Mode and the MCVideo User requests to
answer the call }
    then { the UE (MCVideo Client) responds by sending a SIP 200 (OK) message }
}
```

(2)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Manual
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) }
    then { the UE (MCVideo Client) provides media transmission notification to the MCVideo User }
```

(3)

```
with { the UE (MCVideo Client) having received a Media Transmission Notification message from the SS
(MCVideo Server) }
ensure that {
  when { the MCVideo User requests permission to receive media }
    then { the UE (MCVideo Client) sends a Receive Media Request message }
}
```

(4)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Manual
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a SIP BYE message from the SS (MCVideo Server) }
    then { the UE (MCVideo Client) responds with a SIP 200 (OK) message }
```

6.1.1.4.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in: TS 24.281, clauses 9.2.1.2.1.2, 6.2.3.2.2, 9.2.1.2.3.3, 6.2.6, and in TS 24.581, clause 6.2.5.2.2, 6.2.5.3.2, 6.2.5.3.3. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.2]

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if either of the following conditions are met:
 - a) MCVideo client does not have enough resources to handle the call; or
 - b) any other reason outside the scope of this specification;
- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [51] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure and skip the rest of the steps of this subclause;

NOTE: If the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.

...

- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;

...

- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.2 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is to use manual commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; and
- 9) when the SIP 200 (OK) response to the SIP INVITE request is sent, may subscribe to the conference event package as specified in subclause 9.1.3.1.

[TS 24.281, clause 6.2.3.2.2]

When performing the manual commencement mode procedures:

- 1) the terminating MCVideo client may automatically generate a SIP 183 (Session Progress) in accordance with 3GPP TS 24.229 [11], prior to the MCVideo user's acknowledgement; and
- 2) if the MCVideo user declines the MCVideo session invitation the MCVideo client shall send a SIP 480 (Temporarily Unavailable) response towards the MCVideo server with the warning text set to: "110 user declined the call invitation" in a Warning header field as specified in subclause 4.4, and not continue with the rest of the steps in this subclause.

When generating a SIP 183 (Session Progress) response, the MCVideo client:

- 1) shall include the following in the Contact header field:
 - a) the g.3gpp.mcvideo media feature tag; and

- b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and
- 2) may include a P-Answer-State header field with the value "Unconfirmed" as specified in IETF RFC 4964 [30];

When sending the SIP 200 (OK) response to the incoming SIP INVITE request, the MCVideo client shall follow the procedures in subclause 6.2.3.1.2.

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this subclause and as specified in IETF RFC 5626 [35]

[TS 24.281, clause 9.2.1.2.3.3]

Upon receiving a SIP BYE request for releasing the prearranged MCVideo group call, the MCVideo client shall follow the procedures as specified in subclause 6.2.6.

[TS 24.281, clause 6.2.6]

Upon receiving a SIP BYE request, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581[5]; and
- 2) shall send SIP 200 (OK) response towards MCVideo server according to 3GPP TS 24.229 [11].

[TS 24.581, clause 6.2.5.2.2]

When an MCVideo call is established, the terminating transmission participant:

1. shall create an instance of a 'Transmission participant state transition diagram for general reception control operation'; and
2. shall enter the 'U: reception controller' state.

NOTE: From a transmission participant perspective the MCVideo call is established when the application and signalling plane sends the SIP 200 (OK) response.

[TS 24.581, clause 6.2.5.3.2]

Upon receiving the media transmission notification from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
3. shall store the User ID and the SSRC of the user transmitting the media;
4. if the Reception Mode field is set to '0' indicating automatic reception mode:
 - a. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
 - b. shall map the stored User ID and the SSRC of the user transmitting the media with the instance of 'Transmission participant state transition diagram for basic reception control operation' created in step a); and
 - c. shall enter the 'U: has permission to receive' state;
5. may display the details of the incoming media to the user; and
6. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

Upon receiving an indication from the user to request permission to receive media, the transmission participant:

1. shall send the Receive Media Request message toward the transmission control server; The Receive Media Request message:
 - a. if a different priority than the normal priority is required, shall include the Reception Priority field with the priority not higher than negotiated with the transmission control server as specified in subclause 14.3.3; and
 - b. if the receive media request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
3. shall map the stored User ID and the SSRC of the user transmitting the media with instance of 'Transmission participant state transition diagram for basic reception control operation' created in step 2; and
4. shall remain in the 'U: reception controller' state.

6.1.1.4.3 Test description

6.1.1.4.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.4.3.2 Test procedure sequence

Table 6.1.1.4.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT group call establishment with manual commencement' as described in TS 37.579-1 [2] Table 5.3.5.3-1?	-	-	1	P
2-5	Void	-	-	-	-
6	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2, 3	P
7-10	Void	-	-	-	-
11	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT call release' as described in TS 37.579-1 [2] Table 5.3.12.3-1?	-	-	4	P
12	Void	-	-	-	-

6.1.1.4.3.3 Specific message contents

Table 6.1.1.4.3.3-1: SIP INVITE from the SS (Step 1, Table 6.1.1.4.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.5.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition MANUAL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.4.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.4.3.3-2			

Table 6.1.1.4.3.3-1A: SDP in SIP INVITE (Table 6.1.1.4.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER
--

Table 6.1.1.4.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.4.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL

Table 6.1.1.4.3.3-3..4: Void**Table 6.1.1.4.3.3-5: SIP 200 (OK) from the UE (Step 1, Table 6.1.1.4.3.2-1; Step 7, TS 37.579-1 [2] Table 5.3.5.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.4.3.3-5A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.4.3.3-6			

Table 6.1.1.4.3.3-5A: SDP in SIP 200 (OK) (Table 6.1.1.4.3.3-5)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.1.1.4.3.3-6: MCVideo-Info in SIP 200 (OK) (Table 6.1.1.4.3.3-5)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.1.1.4.3.6-7: Void

6.1.1.5 On-network / On-demand Pre-arranged Group Call / Emergency Group Call / Client Originated (CO)

6.1.1.5.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorized for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of a MCVideo On-demand Pre-arranged Emergency
  Group Call, with implicit Transmission Control }
  then { the UE (MCVideo Client) requests On-demand Pre-arranged Emergency Group Call by sending a
  SIP INVITE message and, after indication from the SS (MCVideo Server) that the call was established,
  provides transmission granted notification to the MCVideo User }
}
```

(2)

```
with { the UE (MCVideo Client) having established an MCVideo On-demand Pre-arranged Group Call }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User(s) }
  then { the UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo
  Server) (Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission End
  Response, Transmission Idle ) }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Emergency Group Call, with
implicit Transmission Control }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Group Call }
  then { the UE (MCVideo Client) sends a Transmission End Request, and acknowledges the
  Transmission End Response with a Transmission Control ACK, and then sends a SIP BYE request and
  leaves the MCVideo Session }
}
```

6.1.1.5.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 9.2.1.2.1.1, 6.2.8.1.1, 6.2.8.1.2, 6.2.8.1.3, 6.2.8.1.4, 6.2.1 and TS 24.581, Test Case 6.2.4.4.6. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo prearranged group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;

- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;
- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 12) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2;
- 13) if the MCVideo client imminent peril group state for this group is set to "MVI 2: in-progress" or "MVI 4: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "prearranged";
 - b) the <mcvideo-request-uri> element set to the group identity;
 - c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.

- d) if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;

NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.

NOTE 4: The MCVideo client is informed about temporary groups and regrouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].

NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.

- 15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.1;
- 16) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and

17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5] ;
- 2) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in subclause 6.2.8.1.4; and
- 3) may subscribe to the conference event package as specified in subclause 9.1.3.1.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or
- 2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13.

[TS 24.281, clause 6.2.8.1.1]

This subclause is referenced from other procedures.

When the MCVideo emergency state is set and this MCVideo user and MCVideo group are authorized to initiate MCVideo emergency group calls as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client:

- 1) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP INVITE request, an <emergency-ind> element set to "true" and if the MCVideo emergency group call state is set to "MVEGC 1: emergency-gc-capable", shall set the MCVideo emergency group call state to "MVEGC 2: emergency-call-requested";
- 2) if the MCVideo user has also requested an MCVideo emergency alert to be sent and this is an authorized request for MCVideo emergency alert as determined by the procedures of subclause 6.2.8.1.6, and the MCVideo emergency alert state is set to "MVEA 1: no-alert", shall:
 - a) set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to "true" and set the MCVideo emergency alert state to "MVEA 2: emergency-alert-confirm-pending"; and
 - b) perform the procedures specified in subclause 6.2.9.1 for the MCVideo emergency alert trigger;
- 3) if the MCVideo user has not requested an MCVideo emergency alert to be sent and the MCVideo emergency alert state is set to "MVEA 1: no-alert", shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to "false"; and
- 4) if the MCVideo client emergency group state of the group is set to a value other than "MVEG 2: in-progress" set the MCVideo client emergency group state of the MCVideo group to "MVEG 3: confirm-pending".

NOTE 1: This is the case of an MCVideo user already being in the MCVideo emergency state it initiated previously while originating an MCVideo emergency group call or MCVideo emergency alert. All group calls the MCVideo user originates while in MCVideo emergency state will be MCVideo emergency group calls.

When the MCVideo emergency state is clear and the MCVideo emergency group call state is set to "MVEGC 1: emergency-gc-capable" and the received SIP request contains an authorized request for MCVideo emergency group call as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client shall set the MCVideo emergency state and perform the following actions:

- 1) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP INVITE request an <emergency-ind> element set to "true" and set the MCVideo emergency group call state to "MVEGC 2: emergency-call-requested" state;

- 2) if the MCVideo user has also requested an MCVideo emergency alert to be sent and this is an authorized request for MCVideo emergency alert as determined by the procedures of subclause 6.2.8.1.6, shall:
 - a) include in the application/vnd.3gpp.mcvideo-info+xml MIME body the <alert-ind> element set to "true" and set the MCVideo emergency alert state to "MVEA 2: emergency-alert-confirm-pending"; and
 - b) perform the procedures specified in subclause 6.2.9.1 for the MCVideo emergency alert trigger;
- 3) if the MCVideo user has not requested an MCVideo emergency alert to be sent, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to "false"; and
- 4) if the MCVideo client emergency group state of the group is set to a value other than "MVEG 2: in-progress" shall set the MCVideo client emergency group state of the MCVideo group to "MVEG 3: confirm-pending".

NOTE 2: This is the case of an initial MCVideo emergency group call and optionally an MCVideo emergency alert being sent. As the MCVideo emergency state is not sent, there is no MCVideo emergency alert outstanding.

NOTE 3: An MCVideo group call originated by an affiliated member of an MCVideo group which is in an in-progress emergency state (as tracked on the MCVideo client by the MCVideo client emergency group state) but is not in an MCVideo emergency state of their own will also be an MCVideo emergency group call. The <emergency-ind> and <alert-ind> elements of the application/vnd.3gpp.mcvideo-info+xml MIME body do not need to be included in this case and hence no action needs to be taken in this subclause.

[TS 24.281, clause 6.2.8.1.2]

This subclause is referenced from other procedures.

If the MCVideo emergency group call state is set to either "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" and this is an authorized request for an MCVideo emergency group call as determined by the procedures of subclause 6.2.8.1.8, or the MCVideo client emergency group state of the group is set to "MVEG 2: in-progress", the MCVideo client shall include in the SIP INVITE request a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in subclause 6.2.8.1.15.

NOTE: The MCVideo client ideally would not need to maintain knowledge of the in-progress emergency state of the group (as tracked on the MCVideo client by the MCVideo client emergency group state) but can use this knowledge to provide a Resource-Priority header field set to emergency level priority, which starts the infrastructure priority adjustment process sooner than otherwise would be the case.

If this is an authorized request to cancel the MCVideo emergency group call as determined by the procedures of subclause 6.2.8.1.7, and the MCVideo client emergency group state of the group is "no-emergency" or "cancel-pending", the MCVideo client shall include in the SIP INVITE request a Resource-Priority header field populated with the values for a normal MCVideo group call as specified in subclause 6.2.8.1.15.

[TS 24.281, clause 6.2.8.1.3]

This subclause is referenced from other procedures.

Upon receiving a SIP INFO request within the dialog of the SIP request for a priority group call:

- with the Info-Package header field containing the g.3gpp.mcvideo-info package name;
- with the application/vnd.3gpp.mcvideo-info+xml MIME body associated with the info package according to IETF RFC 6086 [54]; and
- with one or more of the <alert-ind>, <imminentperil-ind> and <emergency-ind> elements set in the application/vnd.3gpp.mcvideo-info+xml MIME body;

the MCVideo client:

- 1) shall send a SIP 200 (OK) response to the SIP INFO request as specified in 3GPP TS 24.229 [4];
- 2) if the MCVideo emergency group call state is set to "MVEGC 3: emergency-call-granted":
 - a) if the MCVideo emergency alert state is set to "MVEA 2: emergency-alert-confirm-pending":

- i) if the <alert-ind> element is set to a value of "false", shall set the MCVideo emergency alert state to "MVEA 1: no-alert"; and
 - ii) if the <alert-ind> element is set to a value of "true", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated";
- 3) if the MCVideo imminent peril group call state is set to "MVICG 2: imminent-peril-call-requested" or "MVICG 3: imminent-peril-call-granted":
- a) if the <imminentperil-ind> element is set to a value of "false" and an <emergency-ind> element is set to a value of "true", shall:
 - i) set the MCVideo imminent peril group state to "MVICG 1: no-imminent-peril";
 - ii) set the MCVideo imminent peril group call state to "MVICG 1: imminent-peril-capable"; and
 - iii) set the MCVideo client emergency group state of the group to "MVEG 2: in-progress"; and

NOTE 1: This is the case of an MCVideo client attempting to make an imminent peril group call when the group is in an in-progress emergency group state. The MCVideo client will then receive a notification that the imminent peril call request was denied, however they will be participating at the emergency level priority of the group. This could occur for example when an MCVideo client requests an imminent peril call to a group that they are not currently affiliated with.

NOTE 2: the MCVideo client emergency group state above is the MCVideo client's view of the in-progress emergency state of the group.

- 4) if the SIP request for a priority group call sent by the MCVideo client did not contain an <originated-by> element and if the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending":
- a) if the <alert-ind> element contained in the SIP INFO request is set to a value of "true", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and
 - b) if the <alert-ind> element contained in the SIP INFO request is set to a value of "false", shall set the MCVideo emergency alert state to "MVEA 1: no-alert".

[TS 24.281, clause 6.2.8.1.4]

In the procedures in this subclause, a priority group call refers to an MCVideo emergency group call or an MCVideo imminent peril group call.

On receiving a SIP 2xx response to a SIP request for a priority group call, the MCVideo client:

- 1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted":
 - a) shall set the MCVideo client emergency group state of the group to "MVEG 2: in-progress" if it was not already set;
 - b) if the MCVideo emergency alert state is set to "MVEA 2: emergency-alert-confirm-pending" and the SIP 2xx response to the SIP request for a priority group call does not contain a Warning header field as specified in subclause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated";
 - c) shall set the MCVideo emergency group call state to "MVEGC 3: emergency-call-granted"; and
 - d) shall set the MCVideo imminent peril group call state to "MVICG 1: imminent-peril-capable" and the MCVideo imminent peril group state to "MVICG 1: no-imminent-peril"; or
- 2) if the MCVideo imminent peril group call state is set to "MVICG 2: imminent-peril-call-requested" or "MVICG 3: imminent-peril-call-granted" and the SIP 2xx response to the SIP request for an imminent peril group call does not contain a Warning header field as specified in subclause 4.4 with the warning text containing the mcvideo-warn-code set to "149":
 - a) set the MCVideo imminent peril group call state to "MVICG 3: imminent-peril-call-granted"; and

- b) set the MCVideo imminent peril group state to "MViG 2: in-progress".

[TS 24.281, clause 6.2.1]

The SDP offer shall contain two SDP media-level sections for MCVideo video media according to 3GPP TS 24.229 [11] and, if transmission control shall be used during the session, shall contain one SDP media-level section for a media- transmission control entity according to 3GPP TS 24.581 [5].

When composing an SDP offer according to 3GPP TS 24.229 [11] the MCVideo client:

- 1) shall set the IP address of the MCVideo client for the offered MCVideo video media stream and, if transmission control shall be used, for the offered media-transmission control entity;

NOTE: If the MCVideo client is behind a NAT the IP address and port included in the SDP offer can be a different IP address and port than the actual IP address and port of the MCVideo client depending on the NAT traversal method used by the SIP/IP Core.

- 2) shall include an "m=audio" media-level section for the MCVideo media stream consisting of:

a) the port number for the media stream selected; and

b) the codec(s) and media parameters and attributes with the following clarification:

i) if the MCVideo client is initiating a call to a group identity;

ii) if the <preferred-voice-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and

iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;

then the MCVideo client:

i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2]; and

c) "i=" field set to "audio component of MCVideo" according to 3GPP TS 24.229 [11];

- 3) shall include an "m=video" media-level section for the MCVideo media stream consisting of:

a) the port number for the media stream selected; and

b) the codec(s) and media parameters and attributes with the following clarification:

i) if the MCVideo client is initiating a call to a group identity;

ii) if the <preferred-video-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and

iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;

then the MCVideo client:

i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2];

c) if the SDP offer is for an ambient viewing call:

i) if this is a remotely initiated ambient viewing call, include an "a=recvonly" attribute; or

ii) if this is a locally initiated ambient viewing call, include an "a=sendonly" attribute; and

d) "i=" field set to "video component of MCVideo" according to 3GPP TS 24.229 [11];

- 4) if transmission control shall be used during the session, shall include an "m=application" media-level section as specified in 3GPP TS 24.581 [5] clause 12 for a media-transmission control entity, consisting of:

- a) the port number for the media-transmission control entity selected as specified in 3GPP TS 24.581 [5]; and
 - b) the 'fmp' attributes as specified in 3GPP TS 24.581 [5] clause 14; and
- 5) if end-to-end security is required for a private call and the SDP offer is not for establishing a pre-established session, shall include the MIKEY-SAKKE I_MESSAGE in an "a=key-mgmt" attribute as a "mikey" attribute value in the SDP offer as specified in IETF RFC 4567 [34].

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

6.1.1.5.3 Test description

6.1.1.5.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.5.3.2 Test procedure sequence

Table 6.1.1.5.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a emergency group call with implicit transmission request. (NOTE 1).	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish an emergency group call with implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1, 2	P
3-7	Void	-	-	-	-
8	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	1	P
9	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	3	P
11-13	Void	-	-	-	-
14	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P
15	Void	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.1.1.5.3.3 Specific message contents

Table 6.1.1.5.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.1.5.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message Body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.5.3.3-1A			
MIME-body-part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.5.3.3-2			

Table 6.1.1.5.3.3-1A: SDP message in SIP INVITE (Table 6.1.1.5.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.1.5.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.5.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, EMERGENCY-CALL, INVITE_REFER

Table 6.1.1.5.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.1.1.5.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	SDP Message as described in Table 6.1.1.5.3.3-3A			

Table 6.1.1.5.3.3-3A: SDP message in SIP 200 (OK) (Table 6.1.1.5.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.1.5.3.3-4: Transmission Granted from the SS (Step 2, Table 6.1.1.5.3.2-1; Step 6a1, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition EMERGENCY-CALL
--

Table 6.1.1.5.3.3-5: Transmission Idle from the SS (Step 10, Table 6.1.1.5.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.7.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition EMERGENCY-CALL

Table 6.1.1.5.3.3-6..8: Void**6.1.1.6 On-network / On-demand Pre-arranged Group Call / Emergency Group Call / Client Terminated (CT)****6.1.1.6.1 Test Purpose (TP)**

(1)

```

with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE message from the SS (MCVideo Server) with an
emergency indication for a MCVideo On-demand Pre-arranged Emergency Group Call }
  then { the UE (MCVideo Client) displays an indication for the Pre-arranged MCVideo Emergency
Group Call to the MCVideo User and responds to the SS (MCVideo Server) with a SIP 200 (OK) message }
}

```

(2)

```

with { the UE (MCVideo Client) having an incoming Pre-arranged Emergency Group Call, with implicit
Transmission Control }
ensure that {
  when { the MCVideo Client) receives a Media Transmission Notification message from the SS (MCVideo
Server) }
  then {the UE (MCVideo Client) provides media transmission notification to the MCVideo User and
sends a Receive Media Request message to the SS (MCVideo Server) and respects the Reception Control
imposed by the SS (MCVideo Server) (Media Transmission Notification, Receive Media Request, Receive
Media Response, Media Reception End Request, Media Reception End Response) }
}

```

(3)

```

with { the UE (MCVideo Client) having sent a Receive Media Request message }
ensure that {
  when { the MCVideo Client) receives a Receive Media Response message from the SS (MCVideo Server)
}
  then {the UE (MCVideo Client) provides receive media success notification to the MCVideo User }

```

(4)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Emergency Group Call, with
implicit Transmission Control }
ensure that {
  when {the MCVideo User requests to terminate the ongoing MCVideo Emergency Group Call }
  then { the UE (MCVideo Client) sends a Media Reception End Request message .
}
}

```

(5)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a SIP BYE message }
  then { the UE (MCVideo Client) sends a SIP 200 (OK) message and leaves the MCVideo session }
}

```

6.1.1.6.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 9.2.1.2.1.2, 9.2.1.2.1.6, 6.2.3.1.2, and 6.2.6. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.2]

In the procedures in this subclause:

- 1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if either of the following conditions are met:
 - a) MCVideo client does not have enough resources to handle the call; or
 - b) any other reason outside the scope of this specification;
- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [51] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorized to restrict the reason for failure and skip the rest of the steps of this subclause;

NOTE: If the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.

- 3) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

- 4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
- a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element; and
 - iii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - b) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - c) shall set the MCVideo imminent peril group state to "MVIC 1: no-imminent-peril"; and
 - d) shall set the MCVideo imminent peril group call state to "MVIC 1: imminent-peril-gc-capable"; otherwise
- 5) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
- a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo imminent peril group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo imminent peril group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) should display the MCVideo group identity of the group with the imminent peril condition contained in the <mcvideo-calling-group-id> element; and
 - b) shall set the MCVideo imminent peril group state to "MVIC 2: in-progress";
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.2 if one of the following conditions are met:
- a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client allows the call to be answered with automatic commencement mode;
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.2 if one of the following conditions are met:
- a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is to use manual commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; and
- 9) when the SIP 200 (OK) response to the SIP INVITE request is sent, may subscribe to the conference event package as specified in subclause 9.1.3.19.2.1.2.1.6 MCVideo client receives SIP re-INVITE request

This subclause covers both on-demand session.

Upon receipt of a SIP re-INVITE request the MCVideo client:

- 1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo emergency group call and an indication that this is an MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - c) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - d) shall set the MCVideo imminent peril group state to "MVIC 1: no-imminent-peril"; and
 - e) shall set the MCVideo imminent peril group call state to "MVIC 1: imminent-peril-gc-capable";
- 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call; and
 - b) shall set the MCVideo imminent peril group state to "MVIC 2: in-progress";
- 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "false":
 - i) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and the MCVideo ID of the MCVideo user cancelling the MCVideo emergency alert; and
 - ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:
 - A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and
 - B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user shall set the MCVideo emergency alert state to "MVEA 1: no-alert";
 - c) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and
 - d) if the MCVideo emergency group call state of the group is set to "MVEGC 3: emergency-call-granted", shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable";
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call;
 - b) shall set the MCVideo imminent peril group state to "MVIC 1: no-imminent-peril"; and
 - c) shall set the MCVideo imminent peril group call state to "MVIC 1: imminent-peril-gc-capable";
- 5) shall check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

- 6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;
- 10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and
- 11) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 6.2.3.1.2]

When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in subclause 6.2.3.1.1 with the following clarification:

- The MCVideo client may include a P-Answer-State header field with the value "Confirmed" as specified in IETF RFC 4964 [30] in the SIP 200 (OK) response.

[TS 24.281, clause 6.2.6]

Upon receiving a SIP BYE request, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581[5]; and
- 2) shall send SIP 200 (OK) response towards MCVideo server according to 3GPP TS 24.229 [11].

6.1.1.6.3 Test description

6.1.1.6.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.6.3.2 Test procedure sequence

Table 6.1.1.6.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish an emergency group call with automatic commencement mode?	-	-	1	P
2-4	Void	-	-	-	-
5	Check: Does the UE (MCVideo client) notify the user of the emergency group call? (NOTE 1)	-	-	1	P
6	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2	P
7-10	Void	-	-	2	P
11	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	3	P
12	Make the UE (MCVideo client) request end of reception. (NOTE 1)	-	-	-	-
13	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CO' as described in TS 37.579-1 [2] Table 5.3B.8.3-1?	-	-	4	P
14-15	Void	-	-	-	-
16	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT call release' as described in TS 37.579-1 [2] Table 5.3.12.3-1?	-	-	5	P
17	Void	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.1.1.6.3.3 Specific message contents

Table 6.1.1.6.3.3-1: SIP INVITE from the SS (Step 1, Table 6.1.1.6.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.6.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.6.3.3-2			

Table 6.1.1.6.3.3-1A: SDP in SIP INVITE (Table 6.1.1.6.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER
--

Table 6.1.1.6.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.6.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL, EMERGENCY-CALL

Table 6.1.1.6.3.3-3: SIP 200 (OK) from the UE (Step 1, Table 6.1.1.6.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.6.3.3-3A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.6.3.3-4			

Table 6.1.1.6.3.3-3A: SDP in SIP 200 (OK) (Table 6.1.1.6.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.1.1.6.3.3-4: MCVideo-Info in SIP 200 (OK) (Table 6.1.1.6.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.1.1.6.3.3-4A: Media Transmission Notification from the SS (Step 6, Table 6.1.1.6.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition EMERGENCY-CALL
--

Table 6.1.1.6.3.3-4B..5: Void**Table 6.1.1.6.3.3-5A: Media Reception End Request from the UE (Step 13, Table 6.1.1.6.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.8.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.3-1, condition UPLINK, EMERGENCY-CALL
--

Table 6.1.1.6.3.3-5B: Transmission Idle from the SS (Step 13, Table 6.1.1.6.3.2-1; Step 3, TS 37.579-1 [2] Table 5.3B.8.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition EMERGENCY-CALL

Table 6.1.1.6.3.3-6..7: Void

6.1.1.7 On-network / On-demand Pre-arranged Group Call / Broadcast Group Call / Client Originated (CO)

6.1.1.7.1 Test Purpose (TP)

(1)

with { the UE (MCVideo Client) registered and authorized for MCVideo Service }

```

ensure that {
  when { the MCVideo User requests the establishment of a MCVideo On-demand Pre-Arranged Broadcast
  Group Call }
  then { the UE (MCVideo Client) requests an On-demand Pre-Arranged Broadcast Group Call by
  sending a SIP INVITE message and acknowledges the SIP 200 (OK) message from the SS (MCVideo Server)
  upon receipt }
}

```

(2)

```

with { the UE (MCVideo Client) having established an MCVideo On-demand Pre-arranged Broadcast Group
Call with Automatic Commencement Mode }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User(s) }
  then { the UE (MCVideo Client) provides transmission granted notification to the MCVideo User
and respects the Transmission Control imposed by the MCVideo Server }
}

```

(3)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Broadcast Group Call}
ensure that {
  when {the UE (MCVideo User) requests to release to end the permission to send RTP media }
  then { the UE (MCVideo Client) sends a Transmission End Request message and acknowledges the
Transmission End Response from the SS (MCVideo Server) and sends a SIP BYE message and leaves the
MCVideo Session }
}

```

6.1.1.7.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 6.2.8.2 and 9.2.1.2.1.1; also TS 24.581, clauses 6.2.4.2.2, 6.2.4.5.3, 6.2.4.6.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 6.2.8.2]

NOTE: This subclause is referenced from other procedures.

When the MCVideo user initiates a broadcast group call, the MCVideo client:

- 1) in the case of the prearranged group call is initiated on-demand, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body the <broadcast-ind> element set to "true" as defined in clause F.1; and
- 2) in the case the prearranged group call is initiated using a pre-established session, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the "body" URI header field in the Refer-To header field the <broadcast-ind> element set to "true" as defined in clause F.1.

[TS 24.281, clause 9.2.1.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

...

- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;
- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;
- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];

...

- 14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

- a) the <session-type> element set to a value of "prearranged";
- b) the <mcvideo-request-uri> element set to the group identity;
- c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.

- d) if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;

NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.

NOTE 4: The MCVideo client is informed about temporary groups and regrouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].

NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.

- 15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.1;
- 16) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the "Transmission participant state transition diagram for basic transmission control operation";
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or rejoining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is rejoining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

6.1.1.7.3 Test description

6.1.1.7.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVidéo.

6.1.1.7.3.2 Test procedure sequence

Table 6.1.1.7.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a broadcast group call with implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a broadcast group call with implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1, 2	P
3-7	Void	-	-	-	-
8	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	2	P
9	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	3	P
11-12	Void	-	-	-	-
12A	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
13	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P
14	Void	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

6.1.1.7.3.3 Specific message contents

Table 6.1.1.7.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.1.7.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.7.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.7.3.3-2			

Table 6.1.1.7.3.3-1A: SDP message in SIP INVITE (Table 6.1.1.7.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.1.7.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.7.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, BROADCAST-CALL, INVITE_REFERER

Table 6.1.1.7.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.1.1.7.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	SDP Message as described in Table 6.1.1.7.3.3-3A			

Table 6.1.1.7.3.3-3A: SDP message in SIP 200 (OK) (Table 6.1.1.7.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.1.7.3.3-4: Transmission Granted from the SS (Step 2, Table 6.1.1.7.3.2-1; Step 6a1, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition ACK, BROADCAST-CALL

Table 6.1.1.7.3.3-4A: Transmission Idle from the SS (Step 10, Table 6.1.1.7.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.7.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition BROADCAST-CALL

Table 6.1.1.7.3.3-5..7: Void

6.1.1.8 On-network / On-demand Pre-arranged Group Call / Broadcast Group Call / Client Terminated (CT)

6.1.1.8.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo Client receives a SIP INVITE message of an MCVideo On-demand Pre-arranged
Broadcast Group Call from the SS (MCVideo Server) }
    then { the UE (MCVideo Client) responds with a SIP 200 (OK) message }
}
```

(2)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Broadcast Group Call, with
implicit Reception Control }
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) and the MCVideo User requests permission to receive media }
    then {the UE (MCVideo Client) sends a Receive Media Request message to the SS (MCVideo Server)
and provides receive media success notification to the MCVideo User and provides a notification to
the MCVideo User indicating the type of call }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Broadcast Group Call, with
implicit Reception Control }
ensure that {
  when {the UE (MCVideo Client) receives a Media Reception End Request message }
    then {UE (MCVideo Client) responds with a Media Reception End Response message and informs the
MCVideo User that the receiving RTP media is being ended and provides a notification to the MCVideo
User indicating the type of call }
}
```

(4)

```
with { the UE (MCVideo Client) having received a Media Reception End Request message }
ensure that {
  when {the UE (MCVideo Client) receives a SIP BYE message }
    then { the UE (MCVideo Client) responds with a SIP 200 (OK) message and leaves the call }
}
```

6.1.1.8.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 9.2.1.2.1.2, 6.2.6, and 10.2.2.2.2; TS 24.581, clause 6.2.5.3.3, 6.2.5.3.4, 6.2.5.3.5, and 6.2.5.5.5. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.2]

In the procedures in this subclause:

- 1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if either of the following conditions are met:
 - a) MCVideo client does not have enough resources to handle the call; or
 - b) any other reason outside the scope of this specification;
- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [51] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure and skip the rest of the steps of this subclause;

NOTE: If the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.

- 3) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element; and
 - iii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - b) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - c) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
 - d) shall set the MCVideo imminent peril group call state to "MVIIGC 1: imminent-peril-gc-capable"; otherwise
- 5) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo imminent peril group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo imminent peril group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) should display the MCVideo group identity of the group with the imminent peril condition contained in the <mcvideo-calling-group-id> element; and
 - b) shall set the MCVideo imminent peril group state to "MVIIG 2: in-progress";
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.2 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client allows the call to be answered with automatic commencement mode;

- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.2 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is to use manual commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; and
- 9) when the SIP 200 (OK) response to the SIP INVITE request is sent, may subscribe to the conference event package as specified in subclause 9.1.3.1.

[TS 24.281, clause 6.2.6]

Upon receiving a SIP BYE request, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581[5]; and
- 2) shall send SIP 200 (OK) response towards MCVideo server according to 3GPP TS 24.229 [11].

[TS 24.281, clause 10.2.2.2.2]

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if any of the following conditions are met:
 - a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];
 - b) MCVideo client does not have enough resources to handle the call; or
 - c) any other reason outside the scope of this specification;

otherwise, continue with the rest of the steps.

NOTE 1: If the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function can choose to accept the request.

- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this subclause;
- 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
- 4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:

- a) shall extract the MCVid ID of the originating MCVid client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
- b) shall convert the MCVid ID to a UID as described in 3GPP TS 33.180 [8];
- c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
- d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in subclause 4.4; and
- e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 2: With the PCK successfully shared between the originating MCVid client and the terminating MCVid client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

- 5) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) may display to the MCVid user the MCVid ID of the inviting MCVid user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.1 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVid service setting at the invited MCVid client for answering the call is set to automatic commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVid service setting at the invited MCVid client for answering the call is set to manual commencement mode, yet the invited MCVid client is willing to answer the call with automatic commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.1 if either of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVid service setting at the invited MCVid client for answering the call is set to manual commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVid service setting at the invited MCVid client for answering the call is set to automatic commencement mode, yet the invited MCVid client allows the call to be answered with manual commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Upon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVid client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVid client:

- 1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and
- 2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVid client:

shall follow the procedures in subclause 10.2.5.2.

[TS 24.581, clause 6.2.5.3.3]

Upon receiving an indication from the user to request permission to receive media, the transmission participant:

1. shall send the Receive Media Request message toward the transmission control server; The Receive Media Request message:
 - a. if a different priority than the normal priority is required, shall include the Reception Priority field with the priority not higher than negotiated with the transmission control server as specified in subclause 14.3.3; and
 - b. if the receive media request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
3. shall map the stored User ID and the SSRC of the user transmitting the media with instance of 'Transmission participant state transition diagram for basic reception control operation' created in step 2; and
4. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.4]

Upon receiving a Transmission end notify message, the transmission participant:

1. shall inform the user about the media transmission ended by another user; and
2. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.5]

Upon receiving an MCVideo call release step 1 request from the application and signalling plane when the MCVideo call is going to be released or when the transmission participant is leaving the MCVideo call, the transmission participant:

1. shall stop receiving reception control messages;
2. shall request the MCVideo client to stop receiving RTP media packets; and
3. shall enter the 'Call releasing' state.

[TS 24.581, clause 6.2.5.5.5]

Upon receiving a Media reception end request message, the transmission participant:

1. if the first bit in the subtype of the Media reception end request message set to "1" (Acknowledgment is required) as described in subclause 8.3.2, shall send a Reception control Ack message. The Reception control Ack message:
 - a. shall include the Message Type field set to '2' (Media reception end request);
 - b. shall include the Source field set to '0' (the transmission participant is the source); and
 - c. shall include the Message Name field set to MCV2.
2. shall inform the user that the receiving RTP media is being ended;
3. may give information to the user about the reason for ending the received RTP media;
4. shall request the MCVideo client to discard any remaining buffered RTP media packets and stop displaying to user;
5. shall send a Media reception end response message towards the transmission control server;
6. may provide a Media reception end notification to the MCVideo user;
7. if the Receive Media Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call; and
8. shall enter the 'terminated' state.

6.1.1.8.3 Test description

6.1.1.8.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.8.3.2 Test procedure sequence

Table 6.1.1.8.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish a broadcast group call?	-	-	1	P
2-4	Void	-	-	-	-
5	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2	P
6-8	Void	-	-	-	-
9	Check: Does the UE (MCVideo client) provide receive media success notification and the type of call to the user? (NOTE 1)	-	-	2	P
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	3	P
11-12	Void	-	-	-	-
13	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT call release' as described in TS 37.579-1 [2] Table 5.3.12.3-1?	-	-	4	P
14	Void	-	-	4	P
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

6.1.1.8.3.3 Specific message contents

Table 6.1.1.8.3.3-1: SIP INVITE from the SS (Step 1, Table 6.1.1.8.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.8.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.8.3.3-2			

Table 6.1.1.8.3.3-1A: SDP in SIP INVITE (Table 6.1.1.8.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER
--

Table 6.1.1.8.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.8.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL, BROADCAST-CALL

Table 6.1.1.8.3.3-3: SIP 200 (OK) from the UE (Step 1, Table 6.1.1.8.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.8.3.3-3A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.8.3.3-4			

Table 6.1.1.8.3.3-3A: SDP in SIP 200 (OK) (Table 6.1.1.8.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.1.1.8.3.3-4: MCVideo-Info in SIP 200(OK) (Table 6.1.1.8.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.1.1.8.3.3-4A: Media Transmission Notification from the SS (Step 5, Table 6.1.1.8.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition BROADCAST-CALL
--

Table 6.1.1.8.3.3-5..6: Void**Table 6.1.1.8.3.3-7: Media Reception End Request from the SS (Step 10, Table 6.1.1.8.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.10.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.3-1, condition DOWNLINK, BROADCAST-CALL
--

Table 6.1.1.8.3.3-7A: Transmission Idle from the SS (Step 10, Table 6.1.1.8.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition BROADCAST-CALL

Table 6.1.1.8.3.3-8..9: Void**6.1.1.9 On-network / On-demand Pre-arranged Group Call / Broadcast Group Call with Temporary Group / Client Originated (CO)****6.1.1.9.1 Test Purpose (TP)**

(1)

```

with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of a MCVideo On-demand Pre-arranged Broadcast
Group Call with a Temporary Group }
  then { the UE (MCVideo Client) requests On-demand Pre-arranged Broadcast Group Call by sending a
SIP INVITE message and responds to a SIP 200 (OK) message with a SIP ACK message }
}

```

(2)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Broadcast Group Call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Broadcast Group Call before the
Broadcast has been completed }
  then { the UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo Session }
}

```

6.1.1.9.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 9.2.1.2.1.1, 6.2.8.2, 6.2.4.1; also, TS 24.481, clause 6.3.14. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

...

- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;
- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];

- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;
- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];

...

- 14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

- a) the <session-type> element set to a value of "prearranged";
- b) the <mcvideo-request-uri> element set to the group identity;
- c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.

- d) if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;

NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.

NOTE 4: The MCVideo client is informed about temporary groups and regrouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].

NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.

- 15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.1;

- 16) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and

- 17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

[TS 24.281, clause 6.2.8.2]

NOTE: This subclause is referenced from other procedures.

When the MCVideo user initiates a broadcast group call, the MCVideo client:

- 1) in the case of the prearranged group call is initiated on-demand, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body the <broadcast-ind> element set to "true" as defined in clause F.1; and
- 2) in the case the prearranged group call is initiated using a pre-established session, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the "body" URI header field in the Refer-To header field the <broadcast-ind> element set to "true" as defined in clause F.1.

[TS 24.281, clause 6.2.4.1]

Upon receiving a request from an MCVideo user to leave an MCVideo session established using on-demand session signalling, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11];
- 3) shall set the Request-URI to the MCVideo session identity to leave; and
- 4) shall send a SIP BYE request towards MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request, the MCVideo client shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.481, clause 6.3.14]

In order to form a temporary MCS group, a GMC shall send a HTTP POST request according to procedures specified in IETF RFC 2616 [21] and subclause 6.2.3. In the HTTP POST request, the GMC:

- a) shall set the Request-URI to an XCAP URI:
 - 1) in users tree where the XUI is set to a group creation XUI configuration parameter; and
 - 2) with the document selector identifying the temporary MCS group to be created; and
- b) shall include an application/vnd.3gpp.GMOP+xml MIME body containing a GMOP document requesting group regroup creation specified in subclause 7.3.4.3, with a <group> element containing a group document for an MCS group. In the group document, the GMC shall include the <on-network-temporary> element according to subclause 7.2. In the <on-network-temporary> element, the GMC shall include <constituent-MCPTT-group-IDs> element according to subclause 7.2. In the <constituent-MCPTT-group-IDs> element, the GMC shall include one <constituent-MCPTT-group-ID> element according to subclause 7.2 for each MCS group to be combined.

Upon reception of an HTTP 2xx response to the sent HTTP POST request, the GMC shall consider the temporary MCS group formation as successful.

Upon reception of an HTTP 409 (Conflict) response with at least one <alt-value> element in the <uniqueness-failure> error element, the GMC may repeat procedures of the present subclause and identify the temporary MCS group being formed with an MCS Group ID indicated in an <alt-value> element.

6.1.1.9.3 Test description

6.1.1.9.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- An MCVideo temporary group T has been created by performing procedure 'MCX NW initiated temporary group creation' as specified in TS 37.579-1 [2] clause 5.3.22.

- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.9.3.2 Test procedure sequence

Table 6.1.1.9.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a broadcast group call for the selected MCVideo temporary group group T with implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a broadcast group call with the temporary group and with implicit transmission control according to option b,iii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3-5	Void	-	-	1	P
6	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
7	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1 before the broadcast has been completed?	-	-	2	P
8	Void	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.1.1.9.3.3 Specific message contents

Table 6.1.1.9.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.1.9.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.9.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.9.3.3-2			

Table 6.1.1.9.3.3-1A: SDP message in SIP INVITE (Table 6.1.1.9.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.1.9.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.9.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, BROADCAST-CALL, INVITE_REFER				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_Group_T_ID			
associated-group-id	px_MCVideo_Group_A_ID			

Table 6.1.1.9.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.1.1.9.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2.-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	SDP Message as described in Table 6.1.1.9.3.3-3A			

Table 6.1.1.9.3.3-3A: SDP message in SIP 200 (OK) (Table 6.1.1.9.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER				
---	--	--	--	--

Table 6.1.1.9.3.3-4..6: Void**6.1.1.10 On-network / On-demand Pre-arranged Group Call / Imminent Peril Group Call / Client Originated (CO)****6.1.1.10.1 Test Purpose (TP)**

(1)

```

with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo On-demand Pre-arranged Imminent Peril Group Call }
  then { the UE (MCVideo Client) sends a SIP INVITE message to setup the Imminent Peril Group Call }
}

```

(2)

```

with { the UE (MCVideo Client) having established an MCVideo On-demand Pre-arranged Imminent Peril Group Call }
ensure that {
  when { the MCVideo User receives a Transmission Granted message ) }
  then { the UE (MCVideo Client) responds with a Transmission Control Ack message and provides Transmission granted notification to the MCVideo User and respects Transmission Control (Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission Control Response) }
}

```

(3)

```

with { the UE (MCVideo Client) having an ongoing MCVideo On-demand Pre-arranged Imminent Peril Group Call }
ensure that {
  when { the MCVideo User requests to release Transmission control }
  then { the UE (MCVideo Client) sends a Transmission End Request message and then responds to the Transmission End Response message with a Transmission Control ACK message }
}

```

```

    }

```

(4)

```

with { the UE (MCVideo Client) having released Transmission control }
ensure that {
  when { the MCVideo User requests to terminate the On-demand Pre-arranged Imminent Peril Group Call }
  then { the UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo Session }
}

```

6.1.1.10.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 9.2.1.2.1.1 and 6.2.8.1.9; TS 24.581 clauses 6.2.4.2.2, 6.2.4.4.6, 6.2.4.5.3, 6.2.4.6.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo prearranged group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;
- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;
- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];

- 12) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2;
- 13) if the MCVideo client imminent peril group state for this group is set to "MVIg 2: in-progress" or "MVIg 4: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "prearranged";
 - b) the <mcvideo-request-uri> element set to the group identity;
 - c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.

- d) if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;

NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.

NOTE 4: The MCVideo client is informed about temporary groups and regrouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].

NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.

- 15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.1;
- 16) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5] ;
- 2) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIgC 2: imminent-peril-call-requested" or "MVIgC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in subclause 6.2.8.1.4; and
- 3) may subscribe to the conference event package as specified in subclause 9.1.3.1.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or
- 2) if the MCVideo imminent peril group call state is set to "MVIgC 2: imminent-peril-call-requested" or "MVIgC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13.

[TS 24.281, clause 6.2.8.1.9]

This subclause is referenced from other procedures.

When the MCVideo client receives a request from the MCVideo user to originate an MCVideo imminent peril group call, and this is an authorised request for an MCVideo imminent peril group call as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client:

- 1) if the MCVideo client imminent peril group state is set to "MVIGC 1: imminent-peril-capable" and the in-progress emergency state of the group is set to a value of "false":
 - a) shall include in the SIP request a MIME mcvideoinfo body as defined in Annex F.1 with the <imminentperil-ind> element set to "true" and set the MCVideo emergency group call state to "MVIGC 2: imminent-peril-call-requested" state; and
 - b) if the MCVideo client imminent peril group state of the group is set to a value other than "MVIG 2: in-progress" shall set the MCVideo client emergency group state of the MCVideo group to "MVIG 3: confirm-pending".

NOTE: An MCVideo group call originated by an affiliated member of an MCVideo group which is in an in-progress imminent peril state (as tracked on the MCVideo client by the MCVideo client imminent peril group state) will also have the priority associated with MCVideo imminent peril group calls. The <imminentperil-ind> element of the MIME mcvideoinfo body does not need to be included in this case, nor do any state changes result and hence no action needs to be taken in this subclause.

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the 'Transmission participant state transition diagram for basic transmission control operation';
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or rejoining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is rejoining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide Transmission granted notification to the user, if not already done;

3. shall stop timer T100 (Transmission Request); and
4. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVidéo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVidéo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

6.1.1.10.3 Test description

6.1.1.10.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVidéo.

6.1.1.10.3.2 Test procedure sequence

Table 6.1.1.10.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a imminent peril group call with implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish an imminent peril group call with implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3-7	Void	-	-	-	-
8	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1).	-	-	2	P
9	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	3	P
11-12	Void	-	-	-	-
13	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
14	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	4	P
15	Void	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.1.1.10.3.3 Specific message contents

Table 6.1.1.10.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.1.10.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.10.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.10.3.3-2			

Table 6.1.1.10.3.3-1A: SDP message in SIP INVITE (Table 6.1.1.10.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.1.10.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.10.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, IMPERIL-CALL, INVITE_REFER

Table 6.1.1.10.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.1.1.10.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	SDP Message as described in Table 6.1.1.10.3.3-3A			

Table 6.1.1.10.3.3-3A: SDP message in SIP 200 (OK) (Table 6.1.1.10.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.1.10.3.3-4: Void**Table 6.1.1.10.3.3-5: Transmission Granted from the SS (Step 2, Table 6.1.1.10.3.2-1; Step 6a1, TS 37.579-1 [2] Table 5.3B.1.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition IMPERIL-CALL
--

Table 6.1.1.10.3.3-5A: Transmission Idle from the SS (Step 10, Table 6.1.1.10.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.7.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition IMPERIL-CALL

Table 6.1.1.10 3.3-6..8: Void

6.1.1.11 On-network / On-demand Pre-arranged Group Call / Imminent Peril Group Call / Client Terminated (CT)

6.1.1.11.1 Test Purpose (TP)

(1)

```

with { the UE (MCVideo Client) registered and authorized for MCVideo Service }
ensure that {
  when { the MCVideo Client receives a SIP INVITE message of an MCVideo On-demand Pre-arranged
Imminent Peril Group Call and the MCVideo User answers the call }
then { the MCVideo Client responds to the SS (MCVideo Server) with a SIP 200 (OK) message }
}

```

(2)

```

with { the UE (MCVideo Client) having an ongoing MCVideo Pre-arranged Imminent Peril Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) }
then { the UE (MCVideo Client) provides media transmission notification to the MCVideo User and
sends a Receive Media Request message to the SS (MCVideo Server) }
}

```

(3)

```

with { the UE (MCVideo Client) having an ongoing MCVideo On-network Pre-arranged Imminent Peril
Group Call }
ensure that {
  when { the MCVideo User requests to end the RTP media reception }
  then { the UE (MCVideo Client) sends a Media Reception End Request message }
}

```

(4)

```

with { the UE (MCVideo Client) having an ongoing MCVideo On-demand Pre-arranged Imminent Peril Group
Call }
ensure that {
  when { the MCVideo User requests to terminate the On-demand Pre-arranged Imminent Peril Group Call
}
  then { the UE (MCVideo Client) sends a SIP BYE message and leaves the MCVideo Session }
}

```

6.1.1.11.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 9.2.1.2.1.2, TS 24.581 clauses 6.2.5.2.2, 6.2.5.3.2, 6.2.5.3.3, 6.2.5.4.5, 6.2.5.5.3, 6.2.5.6.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.2]

In the procedures in this subclause:

- 1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if either of the following conditions are met:
 - a) MCVideo client does not have enough resources to handle the call; or
 - b) any other reason outside the scope of this specification;
- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [51] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure and skip the rest of the steps of this subclause;

NOTE: If the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.

- 3) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:

- i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element; and
 - iii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
- b) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - c) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and
 - d) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-gc-capable"; otherwise
- 5) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
- a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo imminent peril group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo imminent peril group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) should display the MCVideo group identity of the group with the imminent peril condition contained in the <mcvideo-calling-group-id> element; and
 - b) shall set the MCVideo imminent peril group state to "MVIG 2: in-progress";
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.2 if one of the following conditions are met:
- a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client allows the call to be answered with automatic commencement mode;
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.2 if one of the following conditions are met:
- a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is to use manual commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; and
- 9) when the SIP 200 (OK) response to the SIP INVITE request is sent, may subscribe to the conference event package as specified in subclause 9.1.3.1.

[TS 24.581, clause 6.2.5.2.2]

When an MCVideo call is established, the terminating transmission participant:

1. shall create an instance of a 'Transmission participant state transition diagram for general reception control operation'; and
2. shall enter the 'U: reception controller' state.

NOTE: From a transmission participant perspective the MCVideo call is established when the application and signalling plane sends the SIP 200 (OK) response.

[TS 24.581, clause 6.2.5.3.2]

Upon receiving the media transmission notification from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
3. shall store the User ID and the SSRC of the user transmitting the media;
4. if the Reception Mode field is set to '0' indicating automatic reception mode:
 - a. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
 - b. shall map the stored User ID and the SSRC of the user transmitting the media with the instance of 'Transmission participant state transition diagram for basic reception control operation' created in step a); and
 - c. shall enter the 'U: has permission to receive' state;
5. may display the details of the incoming media to the user; and
6. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

Upon receiving an indication from the user to request permission to receive media, the transmission participant:

1. shall send the Receive Media Request message toward the transmission control server; The Receive Media Request message:
 - a. if a different priority than the normal priority is required, shall include the Reception Priority field with the priority not higher than negotiated with the transmission control server as specified in subclause 14.3.3; and
 - b. if the receive media request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
3. shall map the stored User ID and the SSRC of the user transmitting the media with instance of 'Transmission participant state transition diagram for basic reception control operation' created in step 2; and
4. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.4.5]

Upon receiving a granted response for Receive media request message, the transmission participant:

1. if the first bit in the subtype of the Receive media response message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '7' (Receive media response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide receive media success notification to the user;
3. if the Receive Media Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;

4. shall stop timer T103 (Receive Media Request); and
5. shall enter the 'U: has permission to receive' state.

[TS 24.581, clause 6.2.5.5.3]

Upon receiving an indication from the user to end the RTP media reception, the transmission participant:

1. shall send a Media reception end request message towards the transmission control server The Media reception end request message:
 - a. if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call); and
 - b. shall include the SSRC of user transmitting the media in the Media reception end request message;
2. shall remove the indication that the participant is overriding without revoke if this indication is stored;
3. shall remove the indication that the participant is overridden without revoke if this indication is stored;
4. shall start timer T104 (Receive Media Release) and initialize counter C104 (Receive Media Release) to 1; and
5. shall enter the 'U: pending reception release' state.

[TS 24.581, clause 6.2.5.6.4]

Upon receiving a MRE response message, the transmission participant:

1. if the first bit in the subtype of the MRE response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '3' (Media reception end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Media reception end notification to the MCVidéo user;
3. if the Receive Media Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T104 (Receive Media Release); and
5. shall enter the 'terminated' state.

6.1.1.11.3 Test description

6.1.1.11.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVidéo.

6.1.1.11.3.2 Test procedure sequence

Table 6.1.1.11.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT group call establishment with manual commencement' as described in TS 37.579-1 [2] Table 5.3.5.3-1 to establish an imminent peril group call with manual commencement mode?	-	-	1	P
2-5	Void	-	-	-	-
6	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2	P
7-10	Void	-	-	-	-
11	Make the UE (MCVideo client) request end of reception. (NOTE 1)	-	-	-	-
12	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CO' as described in TS 37.579-1 [2] Table 5.3B.8.3-1 to end the RTP media reception?	-	-	3	P
13	Void	-	-	-	-
14	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
15	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	4	P
16	Void	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.1.1.11.3.3 Specific message contents

Table 6.1.1.11.3.3-1: SIP INVITE from the SS (Step 1, Table 6.1.1.11.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.5.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition MANUAL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.11.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.11.3.3-2			

Table 6.1.1.11.3.3-1A: SDP in SIP INVITE (Table 6.1.1.11.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER
--

Table 6.1.1.11.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.11.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL, IMPERIL-CALL

Table 6.1.1.11.3.3-3: Void**Table 6.1.1.11.3.3-4: SIP 200 (OK) from the UE (Step 2, Table 6.1.1.11.3.2-1; Step 7, TS 37.579-1 [2] Table 5.3.5.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.11.3.3-4A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.11.3.3-4B			

Table 6.1.1.11.3.3-4A: SDP in SIP 200 (OK) (Table 6.1.1.11.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.1.1.11.3.3-4B: MCVideo-Info in SIP 200 (OK) (Table 6.1.1.11.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.1.1.11.3.3-5..6: Void**Table 6.1.1.11.3.3-6A: Media Transmission Notification from the SS (Step 6, Table 6.1.1.11.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition IMPERIL-CALL
--

Table 6.1.1.11.3.3-7..8: Void**Table 6.1.1.11.3.3-9: Media Reception End Request from the UE (Step 12, Table 6.1.1.11.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.8.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.3-1, condition UPLINK, IMPERIL-CALL
--

Table 6.1.1.11.3.3-9A: Transmission Idle from the SS (Step 12, Table 6.1.1.11.3.2-1; Step 3, TS 37.579-1 [2] Table 5.3B.8.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition IMPERIL-CALL

Table 6.1.1.11.3.3-10: SIP BYE from the UE (Step 15, Table 6.1.1.11.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.2.1-1, condition MT_CALL
--

Table 6.1.1.11.3.3-11: Void

6.1.1.12 On-network / On-demand Pre-arranged Group Call / Transmission Control State Transitions / Client Originated (CO)

6.1.1.12.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo On-demand Pre-arranged Group Call
  forcing Automatic Commencement Mode and implicit Transmission Control }
  then { the UE (MCVideo Client) requests an On-demand Automatic Commencement Mode Pre-arranged
  Group Call establishment with implicit Transmission Control by sending a SIP INVITE message, and,
  after indication from the SS (MCVideo Server) that the call was established, provides transmission
  granted notification to the MCVideo User }
}
```

(2)

```
with { the UE (MCVideo Client) having established a MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User(s) and requests to
  terminate the ongoing MCVideo Group Call }
  then { the UE (MCVideo Client) respects the Transmission Control imposed by the SS(MCVideo
  Server) (Transmission Granted, Media Reception Notification, Transmission Revoked, Queue Position
  Request, Queue Position Info, Transmission Control ACK, Transmission End Request, Transmission End
  Response, Transmission Request, Transmission Rejected, Transmission Cancel Request Notify }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the MCVideo User requests to end the call }
  then { the UE (MCVideo Client) sends SIP BYE message, and leaves the MCVideo Session }
}
```

6.1.1.12.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281, clauses 6.2.3.1.2, 6.2.4.1, 9.2.1.2.1.1, TS 24.581, clauses 6.2.4.2.2, 6.2.4.3.2, 6.2.4.4.2, 6.2.4.4.5, 6.2.4.4.6, 6.2.4.5.5, 6.2.4.5.6, 6.2.4.5.7, 6.2.4.6.4, 6.2.4.8.2, 6.2.4.9.2, 6.2.4.9.4, 6.2.4.9.6. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 6.2.3.1.2]

When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in subclause 6.2.3.1.1 with the following clarification:

- The MCVideo client may include a P-Answer-State header field with the value "Confirmed" as specified in IETF RFC 4964 [30] in the SIP 200 (OK) response.

[TS 24.281, clause 6.2.4.1]

Upon receiving a request from an MCVideo user to leave an MCVideo session established using on-demand session signalling, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11];
- 3) shall set the Request-URI to the MCVideo session identity to leave; and
- 4) shall send a SIP BYE request towards MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request, the MCVideo client shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 9.2.1.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo prearranged group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;
- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;
- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 12) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2;
- 13) if the MCVideo client imminent peril group state for this group is set to "MVI 2: in-progress" or "MVI 4: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "prearranged";
 - b) the <mcvideo-request-uri> element set to the group identity;

c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.

d) if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;

NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.

NOTE 4: The MCVideo client is informed about temporary groups and regrouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].

NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.

15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.1;

16) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and

17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]
- 2) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in subclause 6.2.8.1.4; and
- 3) may subscribe to the conference event package as specified in subclause 9.1.3.1.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or
- 2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the "Transmission participant state transition diagram for basic transmission control operation";
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or re-joining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:

- a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is re-joining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.3.2]

Upon receiving an indication from the user to request permission to send media, the transmission participant:

1. void
2. shall send the Transmission Request message toward the transmission control server; The Transmission Request message:
 - a. if a different priority than the normal priority is required, shall include the Transmission Priority field with the priority not higher than negotiated with the transmission control server as specified in subclause 14.3.3; and
 - b. if the Transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
3. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1; and
4. shall enter the 'U: pending request to transmit' state.

[TS 24.581, clause 6.2.4.4.2]

Upon receiving a Transmission rejected message, the transmission participant:

1. if the first bit in the subtype of the Transmission rejected message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission rejected); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide Transmission rejected notification to the user;
3. may display the Transmission rejected reason to the user using information in the Reject Cause field;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.4.5]

Upon receiving a Queue Position Info message, the transmission participant:

1. if the first bit in the subtype of the Queue Position Info message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '5' (Queue Position Info); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide Transmission request queued notification to the MCVideo user;
3. may provide the queue position and priority to the MCVideo user; and

4. shall enter the 'U: queued transmission' state.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.5]

Upon receiving a Transmission Revoked message, the transmission participant:

1. shall inform the user that the permission to send RTP media is being revoked;
2. may give information to the user about the reason for revoking the permission to send media;
3. shall request the media in the MCVideo client discard any remaining buffered RTP media packets and to stop forwarding of encoded video to the MCVideo server; and
4. if the revoke reason is:
 - a. terminate the RTP stream, shall enter the 'U: pending end of transmission' state:
 - i. shall send a Transmission end request message towards the transmission control server; and
 - ii. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; or
 - b. queue the transmission, shall enter the 'U: queued transmission' state:
 - i. shall send a Queue Position Request message towards the transmission control server; and
 - ii. shall start timer T102 (Transmission Queue Position Request) and initialize counter C102 (Queue Position Request) to 1.

[TS 24.581, clause 6.2.4.5.6]

Upon receiving a Media Reception notification message, the transmission participant:

1. shall inform the user about the media reception by another user; and
2. shall remain in the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.7]

Upon receiving a Transmission End Request message from transmission control server, the transmission participant:

1. shall inform the user that the permission to send RTP media is being revoked;
2. may give information to the user about the reason for terminating the permission to send media;
3. shall request the media in the MCVideo client to discard any remaining buffered RTP media packets and to stop forwarding of encoded video to the MCVideo server; and

4. shall send Transmission End Response message to the transmission control server.
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

[TS 24.581, clause 6.2.4.8.2]

Upon receiving an MCVideo call release step 2 request from the application and signalling, the transmission participant:

1. shall release all resources including any running timers associated with the MCVideo call; and
2. shall enter the 'Start-stop' state and terminate the current instance of the "Transmission control state machine – basic".

[TS 24.581, clause 6.2.4.9.2]

Upon receiving a Queue Position Info message, the transmission participant:

1. if the first bit in the subtype of the Queue Position Info message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '5' (Queue Position Info); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. if the message indicates that the request has been queued or if a request for the queue position was sent, the transmission participant:
 - a. may provide the queue position and priority (if available) to the MCVideo user;
3. shall stop the timer T102 (Transmission Queue Position Request), if running; and
4. shall remain in the 'U: queued transmission' state.

[TS 24.581, clause 6.2.4.9.4]

Upon receipt of an indication from the MCVideo client to cancel the media transmit request from the queue, the transmission participant:

1. shall send the Transmission end request message to the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.9.6]

Upon receiving a Transmission cancel request notify message, the transmission participant:

1. if the first bit in the subtype of the Transmission cancel request notify message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '10' (Transmission cancel request notify); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall enter in the 'U: has no permission to transmit' state.

6.1.1.12.3 Test description

6.1.1.12.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.12.3.2 Test procedure sequence

Table 6.1.1.12.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a group call with automatic commencement mode and implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a group call with automatic commencement mode and implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3-6	Void	-	-	-	-
6A	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	2	P
7	The SS (MCVideo server) sends information about the media reception of another user.	<--	Media Reception Notification	-	-
7A	Check: Does the UE (MCVideo client) notify the user about the media reception by another user? (NOTE 1)	-	-	2	P
8	The SS (MCVideo server) is revoking permission to transmit with revoke reason #7 - "Queue the transmission"	<--	Transmission Revoked	-	-
8A	Check: Does the UE (MCVideo client) notify the user that the permission to send RTP media is being revoked? (NOTE 1)	-	-	2	P
9	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Queue Position Request' as described in TS 37.579-1 [2] Table 5.3B.5.3-1 with the Queue Position Info requesting an acknowledgement?	-	-	2	P
10-11	Void	-	-	-	-
12	Make the UE (MCVideo client) cancel the transmission request. (NOTE 1)	-	-	-	-
12A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1 to cancel the media transmit request from the queue?	-	-	2	P
13	Void	-	-	-	-
14	Make the UE (MCVideo client) request transmission. (NOTE 1)	-	-	-	-
14A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission Request - Transmission Rejected' as described in TS 37.579-1 [2] Table 5.3B.6.3-1?	-	-	2	P
15-15A	Void.	-	-	-	-
16	Make the UE (MCVideo client) request transmission. (NOTE 1)	-	-	-	-

16A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Transmission Request – Queue Position Info' as described in TS 37.579-1 [2] Table 5.3B.4.3-1?	-	-	2	P
17	Void	-	-	-	-
17A	Does the UE (MCVideo client) provide Transmission request queued notification to the user? (NOTE 1)	-	-	-	-
18	The SS (MCVideo server) removes the UE (MCVideo client) from the queue.	<--	Transmission Cancel Request Notify	-	-
19	Make the UE (MCVideo client) request transmission. (NOTE 1)	-	-	-	-
19A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Transmission Request – Transmission Granted' as described in TS 37.579-1 [2] Table 5.3B.2.3-1?	-	-	2	P
20-20A	Void	-	-	-	-
21	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Transmission End Request CT' as described in TS 37.579-1 [2] Table 5.3B.9.3-1?	-	-	2	P
21A-22	Void	-	-	-	-
23	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
23A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P
24	Void	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

6.1.1.12.3.3 Specific message contents

Table 6.1.1.12.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.1.12.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.12.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.12.3.3-2			

Table 6.1.1.12.3.3-1A: SDP message in SIP INVITE (Table 6.1.1.12.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.1.12.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.12.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, INVITE_REFERER

Table 6.1.1.12.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.1.1.12.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: RFC 3261 [22], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	SDP Message as described in Table 6.1.1.12.3.3-4			

Table 6.1.1.12.3.3-4: SDP message in SIP 200 (OK) (Table 6.1.1.12.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.1.12.3.3-5: Void**Table 6.1.1.12.3.3-6: Queue Position Info from the SS (Step 9, Table 6.1.1.12.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.5.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.1.3-1, condition ACK

Table 6.1.1.12.3.3-7..9:Void

6.1.1.13 On-network / On-demand Pre-arranged Group Call / Reception Control State Transitions / Client Terminated (CT)

6.1.1.13.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE from the SS (MCVideo Server) to initiate an
On-demand Pre-arranged Group Call with Automatic Commencement Mode and implicit Reception Control }
  then { the UE (MCVideo Client) responds by sending a SIP 200 (OK) }
}
```

(2)

```
with { the UE (MCVideo Client) having an incoming On-demand Pre-arranged Group Call, with implicit
Transmission Control }
ensure that {
  when { the MCVideo Client) receives a Media Transmission Notification message from the SS (MCVideo
Server) }
  then {the UE (MCVideo Client) provides media transmission notification to the MCVideo User and
sends a Receive Media Request message to the SS (MCVideo Server) and respects the Reception Control
imposed by the SS (MCVideo Server) (Media Transmission Notification, Receive Media Request, Receive
Media Response, Media Reception End Request, Media Reception End Response, Transmission End Notify,
Media Transmission Notification, Transmission Control ACK) }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a Media Reception Override Notification }
```

```

    then { the UE (MCVideo Client) sends a Media Reception End Request message and informs the user
  }
  }

```

(4)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a Transmission End Notify from the SS (MCVideo Server) }
  then { the UE (MCVideo Client) notifies the MCVideo User that the another user's transmission has
ended.

```

(5)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the MCVideo User requests to end the RTP media reception }
  then { the UE (MCVideo Client) sends a Media Reception End Request message }
}

```

(6)

```

with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a SIP BYE message }
  then { the UE (MCVideo Client) sends a SIP 200 (OK) message and leaves the MCVideo session }
}

```

6.1.1.13.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 6.2.3.1.1, 6.2.3.1.2, 9.2.1.2.3.3; also TS 24.581, clauses 6.2.5.2.2, 6.2.5.3.2, 6.2.5.3.3, 6.2.5.3.4, 6.2.5.4.5, 6.2.5.5.3, 6.2.5.5.4, 6.2.5.5.5, 6.2.5.6.4, and 6.2.5.8.1. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 6.2.3.1.1]

When performing the automatic commencement mode procedures, the MCVideo client:

- 1) shall accept the SIP INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 2) shall include the option tag "timer" in a Require header field of the SIP 200 (OK) response;
- 3) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 4) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 5) shall include the Session-Expires header field in the SIP 200 (OK) response and start the SIP session timer according to IETF RFC 4028 [23]. The "refresher" parameter in the Session-Expires header field shall be set to "uas";
- 6) shall, if the incoming SIP INVITE request contains a Replaces header field, include in the SDP answer in the SIP 200 (OK) response to the SDP offer the parameters used for the pre-established session identified by the contents of the Replaces header field;
- 7) shall, if the incoming SIP INVITE request does not contain a Replaces header field, include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;

NOTE: In the case of a new emergency call where the terminating client is using a pre-established session, the SIP INVITE request containing a Replaces header is used to replace the pre-established session.

- 8) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11];
- 9) shall, if the incoming SIP INVITE request contains a Replaces header field, release the pre-established session identified by the contents of the Replaces header field; and
- 10) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this subclause and as specified in IETF RFC 5626 [35].

[TS 24.281, clause 6.2.3.1.2]

When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in subclause 6.2.3.1.1 with the following clarification:

- The MCVideo client may include a P-Answer-State header field with the value "Confirmed" as specified in IETF RFC 4964 [30] in the SIP 200 (OK) response.

[TS 24.281, clause 9.2.1.2.3.3]

Upon receiving a SIP BYE request for releasing the prearranged MCVideo group call, the MCVideo client shall follow the procedures as specified in subclause 6.2.6.

[TS 24.581, clause 6.2.5.2.2]

When an MCVideo call is established, the terminating transmission participant:

1. shall create an instance of a 'Transmission participant state transition diagram for general reception control operation'; and
2. shall enter the 'U: reception controller' state.

NOTE: From a transmission participant perspective the MCVideo call is established when the application and signalling plane sends the SIP 200 (OK) response.

[TS 24.581, clause 6.2.5.3.2]

Upon receiving the media transmission notification from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
3. shall store the User ID and the SSRC of the user transmitting the media;
4. if the Reception Mode field is set to '0' indicating automatic reception mode:
 - a. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
 - b. shall map the stored User ID and the SSRC of the user transmitting the media with the instance of 'Transmission participant state transition diagram for basic reception control operation' created in step a); and
 - c. shall enter the 'U: has permission to receive' state;
5. may display the details of the incoming media to the user; and
6. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

Upon receiving an indication from the user to request permission to receive media, the transmission participant:

1. shall send the Receive Media Request message toward the transmission control server; The Receive Media Request message:
 - a. if a different priority than the normal priority is required, shall include the Reception Priority field with the priority not higher than negotiated with the transmission control server as specified in subclause 14.3.3; and
 - b. if the receive media request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
3. shall map the stored User ID and the SSRC of the user transmitting the media with instance of 'Transmission participant state transition diagram for basic reception control operation' created in step 2; and
4. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.4]

Upon receiving a Transmission end notify message, the transmission participant:

1. shall inform the user about the media transmission ended by another user; and
2. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.4.5]

Upon receiving a granted response for Receive media request message, the transmission participant:

1. if the first bit in the subtype of the Receive media response message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '7' (Receive media response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide receive media success notification to the user;
3. if the Receive Media Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T103 (Receive Media Request); and
5. shall enter the 'U: has permission to receive' state.

[TS 24.581, clause 6.2.5.5.3]

Upon receiving an indication from the user to end the RTP media reception, the transmission participant:

1. shall send a Media reception end request message towards the transmission control server The Media reception end request message:
 - a. if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call); and
 - b. shall include the SSRC of user transmitting the media in the Media reception end request message;
2. shall remove the indication that the participant is overriding without revoke if this indication is stored;
3. shall remove the indication that the participant is overridden without revoke if this indication is stored;
4. shall start timer T104 (Receive Media Release) and initialize counter C104 (Receive Media Release) to 1; and
5. shall enter the 'U: pending reception release' state.

[TS 24.581, clause 6.2.5.5.4]

Upon receiving a Media reception override notify message, the transmission participant:

1. shall inform the user that the permission to receive a RTP media is being overridden;
2. may give information to the user about the reason for overriding the received RTP media;
3. shall send a Media reception end request message towards the transmission control server;
4. shall start timer T104 (Receive Media Release) and initialize counter C104 (Receive Media Release) to 1; and
5. shall enter the 'U: pending reception release' state.

[TS 24.581, clause 6.2.5.5.5]

Upon receiving a Media reception end request message, the transmission participant:

1. if the first bit in the subtype of the Media reception end request message set to "1" (Acknowledgment is required) as described in subclause 8.3.2, shall send a Reception control Ack message. The Reception control Ack message:
 - a. shall include the Message Type field set to '2' (Media reception end request);
 - b. shall include the Source field set to '0' (the transmission participant is the source); and
 - c. shall include the Message Name field set to MCV2.
2. shall inform the user that the receiving RTP media is being ended;
3. may give information to the user about the reason for ending the received RTP media;
4. shall request the MCVideo client to discard any remaining buffered RTP media packets and stop displaying to user;
5. shall send a Media reception end response message towards the transmission control server;
6. may provide a Media reception end notification to the MCVideo user;
7. if the Receive Media Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call; and
8. shall enter the 'terminated' state.

[TS 24.581, clause 6.2.5.6.4]

Upon receiving a MRE response message, the transmission participant:

1. if the first bit in the subtype of the MRE response message set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '3' (Media reception end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Media reception end notification to the MCVideo user;
3. if the Receive Media Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T104 (Receive Media Release); and
5. shall enter the 'terminated'.

[TS 24.581, clause 6.2.5.8.1]

This state is part of the 'Transmission participant state transition diagram for basic reception control operation'. On entering this state, the transmission participant:

1. shall delete the instance of this basic reception control state machine; and
2. if the session was initiated as a broadcast group call, shall indicate to the 'Transmission participant state transition diagram for general reception control operation' state machine to move to 'Call releasing' state.

6.1.1.13.3 Test description

6.1.1.13.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.13.3.2 Test procedure sequence

Table 6.1.1.13.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish a group call with automatic commencement mode?	-	-	1	P
2-4	Void	-	-	-	-
5	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	-	-
6-8	Void	-	-	-	-
9	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	2	P
10	The SS (MCVideo server) notifies the UE (MCVideo client) that right of Reception of media has been overridden.	<--	Media Reception Override Notification	-	-
10A	Check: Does the UE (MCVideo client) notify the user that the permission to receive media is being overridden? (NOTE 1)	-	-	3	P
11-12	Check: Does the UE (MCVideo client) correctly perform steps 1 and 2 of procedure 'MCVideo Media Reception End Request CO' as described in TS 37.579-1 [2] Table 5.3B.8.3-1 in response to the Media Reception Override Notify message?	-	-	3	P
12A	The SS (MCVideo server) sends a Transmission End Notify message to inform the US (MCVideo client) that another user's transmission has ended.	<--	Transmission End Notify	-	-
13	Check: Does the UE (MCVideo client) notify the user about the media transmission ended by another user? (NOTE 1)	-	-	4	P
14	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1 with the Receive Media Response requesting an acknowledgement?	-	-	2	P
15-17	Void	-	-	-	-
18	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	2	P
19	Void	-	-	-	-
20	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	5	P
21	Void	-	-	-	-
22	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2	P
23-25	Void	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
25A	Make the UE (MCVideo client) request end of reception. (NOTE 1)	-	-	-	-
26	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CO' as described in TS 37.579-1 [2] Table 5.3B.8.3-1?	-	-	5	P
27	Void	-	-	-	-
28	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT call release' as described in TS 37.579-1 [2] Table 5.3.12.3-1?	-	-	6	P
29	Void	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.1.1.13.3.3 Specific message contents

Table 6.1.1.13.3.3-1: SIP INVITE from the SS (Step 1, Table 6.1.1.13.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1

Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.13.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.13.3.3-2			

Table 6.1.1.13.3.3-1A: SDP in SIP INVITE (Table 6.1.1.13.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER

Table 6.1.1.13.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.13.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP_CALL

Table 6.1.1.13.3.3-3: SIP 200 (OK) from the UE (Step 1, Table 6.1.1.13.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP

Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.13.3.3-3A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.13.3.3-3B			

Table 6.1.1.13.3.3-3A: SDP in SIP 200 (OK) (Table 6.1.1.13.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.1.1.13.3.3-3B: MCVideo-Info in SIP 200 (OK) (Table 6.1.1.13.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.1.1.13.3.3-4: Void**Table 6.1.1.13.3.3-5: Receive Media Response from the SS (Step 14, Table 6.1.1.13.3.2-1; Step 5, TS 37.579-1 [2] Table 5.3B.3.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.8-1, condition ACK

Table 6.1.1.13.3.3-6..8: Void

6.1.1.14 On-network / On-demand Pre-arranged Group Call / Re-join procedure / Client Originated (CO)

6.1.1.14.1 Test Purpose (TP)

(1)

```
with {the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic Commencement Mode }
ensure that {
  when {the MCVideo User requests to terminate the ongoing MCVideo Group Call}
  then {the UE (MCVideo Client) sends a SIP BYE message, and leaves the MCVideo Session }
}
```

(2)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the re-join the previous MCVideo On-demand Pre-arranged Group Call }
  then { the UE (MCVideo Client) requests to re-join the Pre-arranged Group Call by sending a SIP INVITE message }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic Commencement Mode}
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS (MCVideo Server) }
  then {the UE (MCVideo Client) provides media transmission notification to the MCVideo User }
}
```

(4)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic Commencement Mode }
ensure that {
  when { the MCVideo User requests permission to receive media }
  then { The UE (MCVideo Client) sends a Receive Media Request message to the SS (MCVideo Server)
and notifies the MCVideo User of the successful Receive Media Request upon receipt of a Receive Media Response message from the SS (MCVideo Server) and respects the Reception Control imposed by the SS (MCVideo Server) (Media Transmission Notification, Receive Media Request, Receive Media Response, Media Reception End Request, Media Reception End Response, Transmission Idle }
}
```

(5)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a SIP BYE message }
  then { the UE (MCVideo Client) sends a SIP 200 (OK) message and leaves the MCVideo session }
}
```

6.1.1.14.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in: TS 24.281, clauses 9.2.1.2.4.1, 9.2.1.2.1.1, 6.2.1, 9.2.1.2.3.3, 6.2.6, TS 24.581 6.2.5.3.2, 6.2.5.3.3, 6.2.5.4.5, 6.2.5.5.5. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-16 requirements.

[TS 24.281, clause 9.2.1.2.4.1]

Upon receiving a request from an MCVideo user to re-join an ongoing MCVideo session or triggered by coming back from out of coverage, the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

NOTE: How an MCVideo client is informed whether it comes back from out of coverage is out of scope of present document.

The MCVideo client shall follow the procedures specified in clause 9.2.1.2.1.1 with the clarification in step 9) of clause 9.2.1.2.1.1 that the Request-URI of the SIP INVITE request shall contain a URI of the MCVideo session identity to re-join.

[TS 24.281, clause 9.2.1.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo prearranged group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in clause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in clause 6.2.8.1.9;
- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in clause 6.2.8.2;
- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;

- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;
- NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.
- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 12) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall include the Resource-Priority header field and comply with the procedures in clause 6.2.8.1.2;
- 13) if the MCVideo client imminent peril group state for this group is set to "MVIC 2: in-progress" or "MVIC 4: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in clause 6.2.8.1.12;
- 14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
- the <session-type> element set to a value of "prearranged";
 - the <mcvideo-request-uri> element set to the group identity;
 - the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and
- NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.
- if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;
- NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.
- NOTE 4: The MCVideo client is informed about temporary groups and regrouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].
- NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.
- 15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.1;
- 16) if an implicit transmission request is required, shall indicate this as specified in clause 6.4; and
- 17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

- shall interact with the user plane as specified in 3GPP TS 24.581 [5] ;
- if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIC 2: imminent-peril-call-requested" or "MVIC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in clause 6.2.8.1.4; and
- may subscribe to the conference event package as specified in clause 9.1.3.1.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or

- 2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in clause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.1.13.

[TS 24.281, clause 6.2.1]

The SDP offer shall contain two SDP media-level sections for MCVideo video media according to 3GPP TS 24.229 [11] and, if transmission control shall be used during the session, shall contain one SDP media-level section for a media- transmission control entity according to 3GPP TS 24.581 [5].

When composing an SDP offer according to 3GPP TS 24.229 [11] the MCVideo client:

- 1) shall set the IP address of the MCVideo client for the offered MCVideo video media stream and, if transmission control shall be used, for the offered media-transmission control entity;

NOTE: If the MCVideo client is behind a NAT the IP address and port included in the SDP offer can be a different IP address and port than the actual IP address and port of the MCVideo client depending on the NAT traversal method used by the SIP/IP Core.

- 2) shall include an "m=audio" media-level section for the MCVideo media stream consisting of:

- a) the port number for the media stream selected; and

- b) the codec(s) and media parameters and attributes with the following clarification:

- i) if the MCVideo client is initiating a call to a group identity;

- ii) if the <preferred-voice-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and

- iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;

then the MCVideo client:

- i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2]; and

- c) "i=" field set to "audio component of MCVideo" according to 3GPP TS 24.229 [11];

- 3) shall include an "m=video" media-level section for the MCVideo media stream consisting of:

- a) the port number for the media stream selected; and

- b) the codec(s) and media parameters and attributes with the following clarification:

- i) if the MCVideo client is initiating a call to a group identity;

- ii) if the <preferred-video-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and

- iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;

then the MCVideo client:

- i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2];

- c) if the SDP offer is for an ambient viewing call:

- i) if this is a remotely initiated ambient viewing call, include an "a=recvonly" attribute; or

- ii) if this is a locally initiated ambient viewing call, include an "a=sendonly" attribute; and
 - d) "i=" field set to "video component of MCVideo" according to 3GPP TS 24.229 [11];
- 4) if transmission control shall be used during the session, shall include an "m=application" media-level section as specified in 3GPP TS 24.581 [5] clause 12 for a media-transmission control entity, consisting of:
- a) the port number for the media-transmission control entity selected as specified in 3GPP TS 24.581 [5]; and
 - b) the 'fmt' attributes as specified in 3GPP TS 24.581 [5] clause 14; and
- 5) if end-to-end security is required for a private call and the SDP offer is not for establishing a pre-established session, shall include the MIKEY-SAKKE I_MESSAGE in an "a=key-mgmt" attribute as a "mikey" attribute value in the SDP offer as specified in IETF RFC 4567 [34].

[TS 24.281, clause 9.2.1.2.3.3]

Upon receiving a SIP BYE request for releasing the prearranged MCVideo group call, the MCVideo client shall follow the procedures as specified in clause 6.2.6.

[TS 24.281, clause 6.2.6]

Upon receiving a SIP BYE request, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581[5]; and
- 2) shall send SIP 200 (OK) response towards MCVideo server according to 3GPP TS 24.229 [11].

[TS 24.581, clause 6.2.5.3.2]

Upon receiving the media transmission notification from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
3. shall store the User ID and the SSRC of the user transmitting the media;
4. if the Reception Mode field is set to '0' indicating automatic reception mode:
 - a. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
 - b. shall map the stored User ID and the SSRC of the user transmitting the media with the instance of 'Transmission participant state transition diagram for basic reception control operation' created in step a); and
 - c. shall enter the 'U: has permission to receive' state;
5. may display the details of the incoming media to the user; and
6. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

Upon receiving an indication from the user to request permission to receive media, the transmission participant:

1. shall send the Receive Media Request message toward the transmission control server; The Receive Media Request message:
 - a. if a different priority than the normal priority is required, shall include the Reception Priority field with the priority not higher than negotiated with the transmission control server as specified in clause 14.3.3; and

- b. if the receive media request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
3. shall map the stored User ID and the SSRC of the user transmitting the media with instance of 'Transmission participant state transition diagram for basic reception control operation' created in step 2; and
4. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.4.5]

Upon receiving a granted response for Receive media request message, the transmission participant:

1. if the first bit in the subtype of the Receive media response message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '7' (Receive media response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide receive media success notification to the user;
3. if the Receive Media Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T103 (Receive Media Request); and
5. shall enter the 'U: has permission to receive' state.

[TS 24.581, clause 6.2.5.5.5]

Upon receiving a Media reception end request message, the transmission participant:

1. if the first bit in the subtype of the Media reception end request message set to "1" (Acknowledgment is required) as described in clause 8.3.2, shall send a Reception control Ack message. The Reception control Ack message:
 - a. shall include the Message Type field set to '2' (Media reception end request);
 - b. shall include the Source field set to '0' (the transmission participant is the source); and
 - c. shall include the Message Name field set to MCV2.
2. shall inform the user that the receiving RTP media is being ended;
3. may give information to the user about the reason for ending the received RTP media;
4. shall request the MCVideo client to discard any remaining buffered RTP media packets and stop displaying to user;
5. shall send a Media reception end response message towards the transmission control server;
6. may provide a Media reception end notification to the MCVideo user;
7. if the Receive Media Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call; and
8. shall enter the 'terminated' state.

6.1.1.14.3 Test description

6.1.1.14.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.1.14.3.2 Test procedure sequence

Table 6.1.1.14.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The UE (MCVideo client) correctly performs procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish a group call with automatic commencement mode.	-	-	-	-
2	The UE (MCVideo client) correctly performs procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1.	-	-	-	-
3	The UE (MCVideo client) provides receive media success notification to the user. (NOTE 1)	-	-	-	-
4	The UE (MCVideo client) correctly performs procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1.	-	-	-	-
5	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
6	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	1	P
7	Make the UE (MCVideo client) request to re-join the session that was established in step 1. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a group call with automatic commencement mode and no implicit transmission control according to option a of NOTE 1 in TS 37.579-1 [2] Table 5.3B.1.3-1?	-	-	2	P
9	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	3,4	P
10	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	4	P
11	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	4	P
12	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT call release' as described in TS 37.579-1 [2] Table 5.3.12.3-1?	-	-	5	P
NOTE: This is expected to be done via a suitable implementation dependent MMI.					

6.1.1.14.3.3 Specific message contents

Table 6.1.1.14.3.3-1: SIP INVITE from the SS (Step 1, Table 6.1.1.14.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.14.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.14.3.3-3			

Table 6.1.1.14.3.3-2: SDP in SIP INVITE (Table 6.1.1.14.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER
--

Table 6.1.1.14.3.3-3: MCVideo-Info in SIP INVITE (Table 6.1.1.14.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition GROUP_CALL

Table 6.1.1.14.3.3-4: SIP 200 (OK) from the UE (Step 1, Table 6.1.1.14.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.1.14.3.3-5			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.14.3.3-6			

Table 6.1.1.14.3.3-5: SDP in SIP 200 (OK) (Table 6.1.1.14.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.1.1.14.3.3-6: MCVideo-Info in SIP 200 (OK) (Table 6.1.1.14.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.1.1.14.3.3-7: SIP BYE from the UE (Step 6, Table 6.1.1.14.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.2.1-1, condition MT_CALL
--

Table 6.1.1.14.3.3-8: SIP INVITE from the UE (Step 8, Table 6.1.1.14.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	tsc_MCVideo_SessionId			
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.1.14.3.3-9			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.14.3.3-10			

Table 6.1.1.14.3.3-9: SDP message in SIP INVITE (Table 6.1.1.14.3.3-8)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_OFFER
--

Table 6.1.1.14.3.3-10: MCVideo-Info in SIP INVITE (Table 6.1.1.14.3.3-8)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, INVITE_REFERER

Table 6.1.1.14.3.3-11: SIP 200 (OK) from the SS (Step 8, Table 6.1.1.14.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.1.1.14.3.3-12			

Table 6.1.1.14.3.3-12: SDP message in SIP 200 (OK) (Table 6.1.1.14.3.3-11)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER

6.1.2 Chat Group Call

6.1.2.1 On-network / Chat Group Call / Join Chat Group Session / End Chat Group Call / Client Originated (CO)

6.1.2.1.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an on-demand MCVideo group session using a
MCVideo group identity identifying a chat MCVideo group }
  then {the UE (MCVideo Client) requests to join the Chat Group Call by generating a SIP INVITE
message and, after indication from the SS (MCVideo Server) that Transmission is granted, the UE
(MCVideo Client) provides transmission granted notification to the user and respects Transmission
Control (Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission End
Response) }
}

```

(2)

```

with { UE (MCVideo Client) having an ongoing On-demand Chat Group Call }
ensure that {
  when { the MCVideo User requests to release Transmission Control }
  then { UE (MCVideo Client) sends a Transmission End Request, and respects Transmission Control
(Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission End
Response) }
}

```

(3)

```

with { UE (MCVideo Client) having an ongoing On-demand Chat Group Call }
ensure that {
  when { the MCVideo User requests to end the ongoing MCVideo Chat Group Call and the UE (MCVideo
Client) sends a Transmission End Request and receives a Transmission End Response from the SS
(MCVideo Server) }
  then { UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session}
}

```

6.1.2.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clause 9.2.2.2.1.1, 9.2.2.2.2.1 TS 24.581, clause 6.2.1, 6.2.4.1, 6.2.4.4.6, 6.2.4.5.3, 6.2.4.4.7. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281 clause 9.2.2.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo group session using an MCVideo group identity, identifying a chat MCVideo group, the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo chat group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 7) should include the "timer" option tag in the Supported header field;
- 8) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the refresher parameter is omitted. If included, the refresher parameter shall be set to "uac";
- 9) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 10) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 11) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.1.2;
- 12) if the MCVideo client imminent peril group state for this group is set to "MIG 2: in-progress" or "MVIC 3: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 13) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "chat";
 - b) the <mcvideo-request-uri> element set to the group identity; and
 - c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client;

NOTE 2: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP INVITE request that is sent by the originating participating MCVideo function.

- 14) shall include in the SIP INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1;
- 15) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 16) shall send the SIP INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and
- 2) if the MCVideo emergency group call state is set to "MEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIC 2: imminent-peril-call-requested" or "MVIC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in subclause 6.2.8.1.4.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or
- 2) if the MCVideo imminent peril group call state is set to "MVIC 2: imminent-peril-call-requested" or "MVIC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13.

[TS 24.281, clause 9.2.2.2.1]

When an MCVideo client wants to leave the MCVideo session that has been established using on-demand session, the MCVideo client shall follow the procedures as specified in clause 6.2.4.1.

[TS 24.581, clause 6.2.1]

Based on the negotiations during the call establishment specified in 3GPP TS 24.281 [2], a new instance of the 'Transmission participant state transition diagram for basic transmission control operation', as specified in subclause 6.2.4 and a new instance of the 'Transmission participant state transition diagram for basic reception control operation' as specified in subclause 6.2.5, shall be created for this call.

The SIP INVITE request sent by the application and signalling plane:

1. shall be regarded an implicit Transmission request when an implicit Transmission request is negotiated; and
2. shall not be regarded as an implicit Transmission request in case of a re-join to an already on-going group call.

NOTE: The transmission participant can negotiate the use of prioritization of the Transmission Media Request message. In that case, the transmission participant can request permission to send media at a priority level that is either the same as or lower than the highest priority that was permitted to the participant in the MCVideo call initialization. If a transmission participant is authorized for pre-emptive priority in the MCVideo call it is good practise to always request permission to send RTP media packets at a priority level that is lower than pre-emptive priority unless the user explicitly requests to pre-empt the current RTP media packets sender.

[TS 24.581, clause 6.2.4.1]

The transmission participant shall behave according to the state diagram and the state transitions specified in this subclause.

Figure 6.2.4.1-1 shows the state diagram for 'Transmission participant state transition diagram for basic transmission control operation'.

...

State details are explained in the following subclauses.

If a transmission control message arrives in a state where there is no specific procedure specified for received transmission control message, the transmission participant shall discard the transmission control message and shall remain in the current state.

NOTE: A badly formatted transmission control message received in any state is ignored by the transmission participant and does not cause any change of the current state.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.4.7]

Upon receiving an indication from the user to end the Transmission request, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall stop time T100 (Transmission Request)
3. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
4. shall enter the 'U: pending end of transmission' state.

6.1.2.1.3 Test description

6.1.2.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.2.1.3.2 Test procedure sequence

Table 6.1.2.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a chat group call with implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish the chat group call with implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3-7	Void	-	-	-	-
8	Check: Does the UE (MCVideo client) notify the user that the call has been established? (NOTE 1)	-	-	1	P
9	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	2	P
11-13	Void	-	-	-	-
14	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
15	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P
16	Void	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.1.2.1.3.3 Specific message contents

Table 6.1.2.1.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.2.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.2.1.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.1.3.3-2			

Table 6.1.2.1.3.3-1A: SDP message in SIP INVITE (Table 6.1.2.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.2.1.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.2.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition CHAT-GROUP-CALL, INVITE_REFER
--

Table 6.1.2.1.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.1.2.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.1.2.1.3.3-3B			

Table 6.1.2.1.3.3-3A: Void**Table 6.1.2.1.3.3-3B: SDP message in SIP 200 (OK) (Table 6.1.1.12.3.3-3)**

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.2.1.3.3-4..8: Void

6.1.2.2 On-network / Chat Group Call / Upgrade to Emergency Chat Group Call / Cancel Emergency Chat Group Call / Upgrade to Imminent Peril Chat Group Call / Cancel Imminent Peril Chat Group Call / Client Origination (CO)

6.1.2.2.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an on-demand MCVideo group session using a
MCVideo group identity identifying a chat MCVideo group }
  then {the UE (MCVideo Client) requests to join the Chat Group Call by generating a SIP INVITE
message and, after indication from the SS (MCVideo Server_ that Transmission is granted, the UE
(MCVideo Client) provides transmission granted notification to the user and respects Transmission
Control throughout the session (Transmission Granted, Transmission Control ACK, Transmission End
Request, Transmission End Response) }
}

```

(2)

```

with { UE (MCVideo Client) having established a Chat Group Call and the MCVideo User being
authorized for initiating an MCVideo Emergency Group Call }
ensure that {
  when { the MCVideo User requests to upgrade the ongoing MCVideo Group Call to a MCVideo Emergency
Group Call with Transmission Control }
  then { UE (MCVideo Client) sends a SIP re-INVITE request and upon receipt of a SIP 2xx response
considers the call as being upgraded to an Emergency Group Call and notifies the MCVideo User that
the call has been upgraded }
}

```

(3)

```

with { UE (MCVideo Client) having upgraded an On-demand Group Call to an Emergency Chat Group Call
and the MCVideo User being authorized for cancelling a MCVideo Emergency state (MCVideo in-progress
emergency cancel) }
ensure that {
  when { the MCVideo User requests to cancel the ongoing MCVideo Emergency state }
  then { UE (MCVideo Client) sends a SIP re-INVITE request and upon receipt of a SIP 2xx response
considers the emergency condition cancelled and notifies the user that the call has been downgraded
}
}

```

```

    }

```

(4)

```

with { UE (MCVideo Client) having established an a Chat Group Call and the MCVideo User being
authorized for initiating an MCVideo Imminent Peril Chat Group Call }
ensure that {
  when { the MCVideo User requests to upgrade the ongoing MCVideo Chat Group Call to a MCVideo
Imminent Peril Chat Group Call with Transmission Control }
  then { UE (MCVideo Client) sends a SIP re-INVITE request and upon receipt of a SIP 2xx response
considers the call as being upgraded to Imminent Peril Chat Group Call and notifies the user that
the call has been upgraded }
}

```

(5)

```

with { UE (MCVideo Client) having upgraded an On-demand Chat Group Call to an Imminent Peril Group
Call and the MCVideo User being authorized for cancelling an MCVideo Imminent Peril Chat Group Call
state (MCVideo in-progress imminent peril cancel) }
ensure that {
  when { the MCVideo User requests to cancel the ongoing MCVideo Imminent Peril state }
  then { UE (MCVideo Client) sends a SIP re-INVITE request and upon receipt of a SIP 2xx response
considers the imminent peril condition cancelled }
}

```

(6)

```

with { UE (MCVideo Client) having an ongoing On-demand Chat Group Call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Chat Group Call }
  then { UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session }
}

```

6.1.2.2.2 Conformance Requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 9.2.2.2.1.1, 9.2.2.2.1.3, 9.2.2.2.1.4, 9.2.2.2.1.5, TS 24.581 clauses 6.2.1, 6.2.4.4.6, 6.4.1, 6.4.2, 6.4.3, 6.4.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 9.2.2.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo group session using an MCVideo group identity, identifying a chat MCVideo group, the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo chat group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;

- 6) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 7) should include the "timer" option tag in the Supported header field;
- 8) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the refresher parameter is omitted. If included, the refresher parameter shall be set to "uac";
- 9) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 10) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 11) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.1.2;
- 12) if the MCVideo client imminent peril group state for this group is set to "MIG 2: in-progress" or "MVIC 3: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 13) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "chat";
 - b) the <mcvideo-request-uri> element set to the group identity; and
 - c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client;

NOTE 2: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP INVITE request that is sent by the originating participating MCVideo function.

- 14) shall include in the SIP INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1;
- 15) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 16) shall send the SIP INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and
- 2) if the MCVideo emergency group call state is set to "MEGC 2: emergency-call-requested" or "MEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIC 2: imminent-peril-call-requested" or "MVIC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in subclause 6.2.8.1.4.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency group call state is set to "MEGC 2: emergency-call-requested" or "MEGC 3: emergency-call-granted"; or
- 2) if the MCVideo imminent peril group call state is set to "MVIC 2: imminent-peril-call-requested" or "MVIC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13.

[TS 24.281, clause 9.2.2.2.1.3]

This subclause covers both on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress emergency condition on a chat MCVideo group, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user is not authorised to cancel the in-progress emergency group state of the MCVideo group as determined by the procedures of subclause 6.2.8.1.7, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress emergency group state of the MCVideo group; and
 - b) shall skip the remaining steps of the current subclause;
- 2) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by the MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.3;
- 3) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by another MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.14;
- 4) shall, if the SIP re-INVITE request is to be sent within an on-demand session, include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [51] with the clarifications specified in subclause 6.2.1;
- 5) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2; and
- 6) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

- 1) shall set the MCVideo emergency group state of the group to "MVEG 1: no-emergency";
- 2) shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable"; and
- 3) if the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending", the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the SIP 2xx response to the SIP request for a priority group call does not contain a Warning header field as specified in subclause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall set the MCVideo emergency alert state to "MVEA 1: no-alert".

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

- 1) shall set the MCVideo emergency group state as "MVEG 2: in-progress";
- 2) if the SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element set to a value of "true" and the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and
- 3) if the SIP 4xx response, SIP 5xx response or SIP 6xx response did not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element and did not contain an <originated-by> element, the MCVideo emergency alert (MVEA) state shall revert to its value prior to entering the current procedure.

NOTE 3: If the in-progress emergency group state cancel request is rejected, the state of the session does not change, i.e. continues with MCVideo emergency group call level priority.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13.

[TS 24.281, clause 9.2.2.2.1.4]

This subclause covers both on-demand sessions.

Upon receiving a request from an MCVideo user to upgrade the MCVideo group session to an emergency condition or an imminent peril condition on a chat MCVideo group, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [11], with the clarifications given below.

- 1) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress emergency group state and is not authorised to do so as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorised to upgrade the MCVideo group session to an in-progress emergency group state; and
 - b) shall skip the remaining steps of the current subclause;
- 2) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress imminent peril state and is not authorised to do so as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorised to upgrade the MCVideo group session to an in-progress imminent peril group state; and
 - b) shall skip the remaining steps of the current subclause;
- 3) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo emergency call, the MCVideo client:
 - a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.1;
 - b) if an indication of an MCVideo emergency alert is to be included, shall perform the procedures specified in subclause 6.2.9.1 for the MCVideo emergency alert trigger; and
 - c) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2.
- 4) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo imminent peril call, the MCVideo client:
 - a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.9; and
 - b) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 5) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1;
- 6) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4;
- 7) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2; and
- 8) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and
- 2) shall perform the actions specified in subclause 6.2.8.1.4.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request the MCVideo client shall perform the actions specified in subclause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13.

[TS 24.281, clause 9.2.2.2.1.5]

This subclause covers on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress imminent peril condition on a chat MCVideo group, the MCVideo client shall generate a SIP re-INVITE request by following the procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user is not authorised to cancel the in-progress imminent peril group state of the MCVideo group as determined by the procedures of subclause 6.2.8.1.10, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress imminent peril group state of the MCVideo group; and
 - b) shall skip the remaining steps of the current subclause;
- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.11;
- 3) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "chat"; and
 - b) the <mcvideo-request-uri> element set to the group identity;

NOTE 1: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP re-INVITE request that is sent by the originating participating MCVideo function.

- 5) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP re-INVITE request according to IETF RFC 3840 [22];
- 6) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1;
- 7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5];
- 2) shall set the MCVideo imminent peril group state of the group to "MVIC 1: no-imminent-peril"; and
- 3) shall set the MCVideo imminent peril group call state of the group to "MVIC 1: imminent-peril-gc-capable".

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

- 1) if the SIP 4xx response, SIP 5xx response or SIP 6xx response:
 - a) contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <imminentperil-ind> element set to a value of "true"; or
 - b) does not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <imminentperil-ind> element;

then the MCVideo client shall set the MCVideo imminent peril group state as "MIG 2: in-progress".

NOTE 2: This is the case where the MCVideo client requested the cancellation of the MCVideo imminent peril in-progress state and was rejected.

[TS 24.581, clause 6.2.1]

Based on the negotiations during the call establishment specified in 3GPP TS 24.281 [2], a new instance of the 'Transmission participant state transition diagram for basic transmission control operation', as specified in subclause 6.2.4 and a new instance of the 'Transmission participant state transition diagram for basic reception control operation' as specified in subclause 6.2.5, shall be created for this call.

The SIP INVITE request sent by the application and signalling plane:

1. shall be regarded an implicit Transmission request when an implicit Transmission request is negotiated; and

2. shall not be regarded as an implicit Transmission request in case of a re-join to an already on-going group call.

NOTE: The transmission participant can negotiate the use of prioritization of the Transmission Media Request message. In that case, the transmission participant can request permission to send media at a priority level that is either the same as or lower than the highest priority that was permitted to the participant in the MCVideo call initialization. If a transmission participant is authorized for pre-emptive priority in the MCVideo call it is good practise to always request permission to send RTP media packets at a priority level that is lower than pre-emptive priority unless the user explicitly requests to pre-empt the current RTP media packets sender.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.4.1]

Once an on-demand MCVideo session is established or a pre-established session is in use when the participating MCVideo function receives transmission control messages from the transmission participant in the MCVideo client or from the transmission control server in the controlling MCVideo function, the behaviour of the participating MCVideo function is described in the following subclauses.

[TS 24.581, clause 6.4.2]

Upon receiving a transmission control message the participating MCVideo function:

1. shall immediately forward the transmission control message to the transmission control server if the message is received from the transmission participant;
2. if an MBMS subchannel is not used for a transmission in the session the transmission control message is associated with, shall immediately forward the transmission control message to the transmission participant if the message is received from the transmission control server; and
3. if an MBMS subchannel is used for a transmission in the session the transmission control message is associated with:
 - a. if
 - i. the transmission control message is not a Transmission Idle message or a Media Transmission Notify message;
 - ii. the MCVideo client has not reported "listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3; or
 - iii. the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3 in the latest received MBMS bearer listening status report;shall immediately forward the transmission control message to the transmission participant; and
 - b. if

- i. the MCVideo client has reported "listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3 in the latest received MBMS bearer listening status report; and
- ii. if the transmission control message is the Transmission Idle message or the Media Transmission Notify message,

shall perform actions as specified in subclause 10.2.

NOTE: When the Transmit Idle or Media Transmission Notify messages are discarded the messages are sent to the MCVideo clients over the MBMS subchannel allocated for the transmission as specified in subclause 10.2.

[TS 24.581, clause 6.4.3]

Upon receiving RTP media packets the participating MCVideo function:

1. shall immediately forward the RTP media packet to the controlling MCVideo function if the RTP packet is from an MCVideo client; and
2. if an MBMS subchannel is not used for a transmission in the session the RTP media packets are associated with, shall immediately forward the RTP media packets to the MCVideo client if the RTP packet is from the controlling MCVideo function or the non-controlling MCVideo function.
3. if an MBMS subchannel is used for a transmission in the session the RTP media packets are associated with and if RTP media packets are received from the controlling MCVideo function or the non-controlling MCVideo function:
 - a. if
 - i. the MCVideo client has not reported "listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3; or
 - ii. the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3 in the latest received MBMS bearer listening status report,
 shall immediately forward the RTP media packets to the MCVideo client; and
 - b. if the MCVideo client has reported "listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3 in the latest received MBMS bearer listening status report, shall perform actions as specified in subclause 10.2.

[TS 24.581, clause 6.4.4]

When the participating function receives an indication from the application and signalling plane that session release is initiated, the participating MCVideo function:

1. shall stop sending transmission control messages towards the transmission participant and the transmission control server; and
2. shall stop sending RTP media packets towards the MCVideo client and towards the controlling MCVideo function.

When the participating MCVideo function receives an indication from the application and signalling plane that the session is released, the participating MCVideo function:

1. in case of a pre-established session, shall perform the actions in subclause 9.3.2; and
2. in case of an on-demand session, shall release the media resources associated with the session.

6.1.2.2.3 Test description

6.1.2.2.3.1 Pre-test conditions

Same pre-test conditions as for MCVideo test case 6.1.1.1 with the following exception(s):

None.

6.1.2.2.3.2 Test procedure sequence

Same test procedure sequence as for MCVideo test case 6.1.1.1 with the following exception(s) and clarification(s):

- The term "Group Call" is replaced with "Chat Group Call"
- The term "pre-arranged" can be ignored

6.1.2.2.3.3 Specific message contents

Same specific message contents as for MCVideo test case 6.1.1.1 with the following exception(s) and clarification(s):

- The condition "GROUP-CALL" is replaced with "CHAT-GROUP-CALL"

6.1.2.3 On-network / Chat Group Call / Upgrade to Emergency Chat Group Call / Cancel Emergency Chat Group Call / Upgrade to Imminent Peril Chat Group Call / Cancel Imminent Peril Chat Group Call / Client Terminated (CT)

6.1.2.3.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests to join a MCVideo Chat Group Session }
  then { the UE (MCVideo Client) sends a SIP INVITE message to the SS (MCVideo Server) and
  responds to a SIP 200 (OK) message from the SS (MCVideo Server) with a SIP ACK message and, provides
  transmission granted notification to the MCVideo User, and respects Transmission Control through the
  session }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing Chat Group Call }
ensure that {
  when { the UE (MCVideo Client) receives an upgrade of the ongoing MCVideo Group Call to an MCVideo
  Emergency Group Call via a SIP INVITE message from the SS (MCVideo Server) }
  then { UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) response
  and considers the call as being upgraded to an Emergency Group Call }
}
```

(3)

```
with { UE (MCVideo Client) having an ongoing Chat Group Call, which was upgraded to an Emergency
Chat Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a cancellation of the ongoing MCVideo Emergency state via
  a SIP re-INVITE message from the SS (MCVideo Server) }
  then { UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) response
  and considers the emergency condition cancelled }
}
```

(4)

```
with { UE (MCVideo Client) having an ongoing Chat Group Call }
ensure that {
  when { the UE (MCVideo Client) receives an upgrade of the ongoing MCVideo Chat Group Call to a
  MCVideo Imminent Peril Chat Group Call via a SIP re-INVITE message from the SS (MCVideo Server) }
  then { UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) response
  and considers the call as being upgraded to an Imminent Peril Chat Group Call ( ) }
}
```

(5)

```
with { UE (MCVideo Client) having an ongoing Chat Group Call, which was upgraded to an Imminent
Peril Chat Group Call }
ensure that {
```

```

when { the UE (MCVideo Client) receives a cancellation of the ongoing MCVideo Imminent Peril state
via a SIP re-INVITE message from the SS (MCVideo Server) }
  then { UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) response
and considers the imminent peril condition cancelled.}
}

```

(6)

```

with { UE (MCVideo Client) having an ongoing Chat Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) }
    then {The UE (MCVideo Client) provides media transmission notification to the MCVideo User }
}

```

(7)

```

with { UE (MCVideo Client) having provided media transmission notification to the MCVideo User after
receiving a Media Transmission Notification message from the SS (MCVideo Server)}
ensure that {
  when { the MCVideo User requests permission to receive media }
    then {The UE (MCVideo Client) sends a Receive Media Request message to the SS (MCVideo Server)
and provides receive media success notification to the MCVideo User upon reception of the Receive
Media Response message }
}

```

(8)

```

with { UE (MCVideo Client) having an ongoing Chat Group Call }
ensure that {
  when { the UE (MCVideo User) requests to terminate the ongoing MCVideo Chat Group Call }
    then { UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session }
}

```

6.1.2.3.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 9.2.2.3.1.1, 9.2.2.3.1.3, 9.2.2.4.1.1, 9.2.2.4.1.2, 9.2.2.4.1.3, 9.2.2.5.1.2, 9.2.2.5.1.3, 9.2.2.5.1.6, TS 24.581, clauses 6.2.4.2.2, 6.3.2.2, 6.3.4.4.12, 6.3.5.3.9, and 6.3.5.4.8. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-14 requirements.

[TS 24.281, Clause 9.2.2.3.1.1]

In the procedures in this subclause:

- 1) group identity in an incoming SIP INVITE request refers to the group identity from the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;
- 2) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
- 3) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" for a group identity identifying a chat MCVideo group containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "chat", the participating MCVideo function:

- 1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

NOTE 1: if the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorized request for originating a priority call as determined by subclause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to accept the request.

- 2) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request, and authorise the calling user;

NOTE 2: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in subclause 7.3.

- 3) if through local policy in the originating participating MCVideo function, the user identified by the MCVideo ID is not authorized to make chat group calls, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response to the SIP INVITE request, with warning text set to "108 user not authorized to make chat group calls" in a Warning header field as specified in subclause 4.4;
- 4) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;
- 5) shall check if the number of maximum simultaneous MCVideo group calls supported for the MCVideo user as specified in the <MaxSimultaneousCallsN6> element of the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) has been exceeded. If exceeded, the MCVideo function shall respond with a SIP 486 (Busy Here) response with the warning text set to "103 maximum simultaneous MCVideo group calls reached" in a Warning header field as specified in subclause 4.4. Otherwise, continue with the rest of the steps;

NOTE 3: If the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorized request for originating a priority call as determined by subclause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to allow for an exception to the limit for the maximum simultaneous MCVideo sessions supported for the MCVideo user.

- 6) if the user identified by the MCVideo ID is not affiliated to the group identified in the "SIP INVITE request for originating participating MCVideo function" as determined by subclause 8.2.2.2.11, shall perform the actions specified in subclause 8.2.2.2.12 for implicit affiliation;
- 7) if the actions for implicit affiliation specified in step 6) above were performed but not successful in affiliating the MCVideo user due to the MCVideo user already having N2 simultaneous affiliations, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 486 (Busy Here) response with the warning text set to "102 too many simultaneous affiliations" in a Warning header field as specified in subclause 4.4. and skip the rest of the steps.

NOTE 4: N2 is the total number of MCVideo groups that an MCVideo user can be affiliated to simultaneously as specified in 3GPP TS 23.281 [26].

NOTE 5: if the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorized request for originating a priority call as determined by subclause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to allow an exception to the N2 limit. Alternatively, a lower priority affiliation of the MCVideo user could be cancelled to allow for the new affiliation.

- 8) shall determine the public service identity of the controlling MCVideo function associated with the group identity in the SIP INVITE request;

NOTE 6: The public service identity can identify the controlling MCVideo function in the primary MCVideo system or a partner MCVideo system.

NOTE 7: How the participating MCVideo server discovers the public service identity of the controlling MCVideo function associated with the group identity is out of scope of the current document.

- 9) shall generate a SIP INVITE request as specified in subclause 6.3.2.1.3;
- 10) shall set the Request-URI to the public service identity of the controlling MCVideo function associated with the group identity present in the incoming SIP INVITE request;
- 11) shall include the MCVideo ID of the calling user in <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request;

- 12) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request as specified in subclause 6.3.2.1.1.1;
- 13) if the received SIP INVITE request contains an application/vnd.3gpp.location-info+xml MIME body as specified in Annex F.3; and
 - a) if not already included, shall include a Content-Type header field set to "application/vnd.3gpp.location-info+xml"; and
 - b) if not already copied, shall copy the contents of the application/vnd.3gpp.location-info+xml MIME body received in the SIP INVITE request into an application/vnd.3gpp.location-info+xml MIME body included in the outgoing SIP request;

NOTE 8: Note that the application/vnd.3gpp.mcvideo-info+xml MIME body will already have been copied into the outgoing SIP INVITE request by subclause 6.3.2.1.3.

- 14) if a Resource-Priority header field was included in the received SIP INVITE request, shall include a Resource-Priority header field according to rules and procedures of IETF RFC 4412 [33] set to the value indicated in the Resource-Priority header field of the SIP INVITE request from the MCVideo client; and

NOTE 9: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

- 15) shall forward the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 302 (Moved Temporarily) response to the above SIP INVITE request in step 14), the participating MCVideo function:

- 1) shall generate a SIP INVITE request as specified in subclause 6.3.2.1.10;
- 2) shall include an SDP offer based upon the SDP offer in the received SIP INVITE request from the MCVideo client as specified in subclause 6.3.2.1.1.1; and
- 3) shall forward the SIP INVITE request according to 3GPP TS 24.229 [11];

Upon receipt of a SIP 2xx response to the above SIP INVITE request in step 14) the participating MCVideo function:

- 1) if the SIP 2xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in subclause 6.3.2.3.2;
- 2) shall generate a SIP 200 (OK) response as specified in the subclause 6.3.2.1.5.2;
- 3) shall include in the SIP 200 (OK) response an SDP answer as specified in the subclause 6.3.2.1.2.1;
- 4) shall include Warning header field(s) that were received in the incoming SIP 200 (OK) response;
- 5) shall include the public service identity received in the P-Asserted-Identity header field of the incoming SIP 200 (OK) response into the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response;
- 6) if the procedures of subclause 8.2.2.2.12 for implicit affiliation were performed in the present subclause, shall complete the implicit affiliation by performing the procedures of subclause 8.2.2.2.13;
- 7) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11]; and
- 8) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the above SIP INVITE request in step 14) the participating MCVideo function:

- 1) shall generate a SIP response according to 3GPP TS 24.229 [11];
- 2) shall include Warning header field(s) that were received in the incoming SIP response;
- 3) shall forward the SIP response to the MCVideo client according to 3GPP TS 24.229 [11]; and
- 4) if the implicit affiliation procedures of subclause 8.2.2.2.12 were invoked in the current procedure, shall perform the procedures of subclause 8.2.2.2.14.

[TS 24.281, clause 9.2.2.3.1.3]

This subclause covers on-demand session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", for a terminating MCVideo client of a chat MCVideo group, the participating MCVideo function:

- 1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for terminating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

NOTE: If the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function can by means beyond the scope of this specification choose to accept the request.

- 2) shall check the presence of the isfocus media feature tag in the URI of the Contact header field and if it is not present then the participating MCVideo function shall reject the request with a SIP 403 (Forbidden) response with the warning text set to "104 isfocus not assigned" in a Warning header field as specified in subclause 4.4. Otherwise, continue with the rest of the steps;
- 3) shall generate a SIP INVITE request as specified in subclause 6.3.2.2.3;
- 4) shall set the Request-URI to the public user identity associated with the MCVideo ID of the MCVideo user to be invited based on the contents of the Request-URI of the received "SIP INVITE request for terminating participating MCVideo function";
- 5) shall copy the contents of the P-Asserted-Identity header field of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the outgoing SIP INVITE request;
- 6) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for terminating participating MCVideo function" as specified in subclause 6.3.2.2.1;
- 7) if the received SIP INVITE request contains a Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field;
- 8) shall perform the procedures specified in subclause 6.3.2.2.9 to include any MIME bodies in the received SIP INVITE request; and
- 9) shall send the SIP INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the above SIP INVITE request sent to the MCVideo client, the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as described in the subclause 6.3.2.2.4.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer based on the SDP answer in the received SIP 200 (OK) response as specified in subclause 6.3.2.2.2.1;
- 3) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 4) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

[TS 24.281, Clause 9.2.2.4.1.1]

In the procedures in this subclause:

- 1) MCVideo ID in an incoming SIP INVITE request refers to the MCVideo ID of the originating user from the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;
- 2) group identity in an incoming SIP INVITE request refers to the group identity from the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;

- 3) MCVideo ID in an outgoing SIP INVITE request refers to the MCVideo ID of the called user in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;
- 4) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 5) alert indication in an incoming SIP INVITE request refers to the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a "SIP INVITE request for controlling MCVideo function of an MCVideo group" containing a group identity identifying a chat MCVideo group, the controlling MCVideo function:

- 1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

NOTE 1: If the SIP INVITE request contains an emergency indication set to a value of "true", the controlling MCVideo function can by means beyond the scope of this specification choose to accept the request.

- 2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:
 - a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag;
 - b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; or
 - c) the isfocus media feature tag is present in the Contact header field;
- 3) if received SIP INVITE request includes an application/vnd.3gpp.mcvideoinfo+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in subclause 6.3.3.1.17;
- 4) shall retrieve the necessary group document(s) from the group management server for the group identity contained in the SIP INVITE request and carry out initial processing as specified in subclause 6.3.5.2 and continue with the rest of the steps if the checks in subclause 6.3.5.2 succeed;
- 5) if the MCVideo user identified by the MCVideo ID in the SIP INVITE request is not affiliated with the MCVideo group identified by the group identity in the SIP INVITE request as determined by the procedures of subclause 6.3.6:
 - a) shall check if the MCVideo user is eligible to be implicitly affiliated with the MCVideo chat group as determined by subclause 8.2.2.3.6; and
 - b) if the MCVideo user is not eligible for implicit affiliation, shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the warning text set to "120 user is not affiliated to this group" in a Warning header field as specified in subclause 4.4 and skip the rest of the steps below;
- 6) if the SIP INVITE request contains unauthorized request for an MCVideo emergency group call as determined by subclause 6.3.3.1.13.2:
 - a) shall reject the SIP INVITE request with a SIP 403 (Forbidden) response as specified in subclause 6.3.3.1.14; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 7) if the SIP INVITE request contains an unauthorized request for an MCVideo imminent peril group call as determined by subclause 6.3.3.1.13.6, shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the following clarifications:
 - a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false"; and

- b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 8) if a Resource-Priority header field is included in the SIP INVITE request:
- a) if the Resource-Priority header field is set to the value indicated for emergency calls and the SIP INVITE request does not contain an emergency indication and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps; and
 - b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the SIP INVITE request does not contain an imminent peril indication and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response; and skip the remaining steps;
- 9) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;
- 10) shall create a chat group session and allocate an MCVideo session identity for the chat group session if the MCVideo chat group session identity does not already exist, and may handle timer TNG3 (group call timer) as specified in subclause 6.3.3.5;
- 11) if the chat group session is ongoing and the <on-network-max-participant-count> as specified in 3GPP TS 24.481 [24] is already reached:
- a) if, according to local policy, the user identified by the MCVideo ID in the SIP INVITE request is deemed to have a higher priority than an existing user in the chat group session, may remove a participant from the session by following subclause 9.2.1.4.4.3, and skip the next step; and

NOTE 2: The local policy for deciding whether to admit a user to a call that has reached its maximum amount of participants can include the <user-priority> and the <participant-type> of the user as well as other information of the user from the group document as specified in 3GPP TS 24.481 [24]. The local policy decisions can also include taking into account whether the imminent-peril indicator or emergency indicator was received in the SIP INVITE request.

- b) shall return a SIP 486 (Busy Here) response with the warning text set to "122 too many participants" to the originating network as specified in subclause 4.4. Otherwise, continue with the rest of the steps;
- 12) if the received SIP INVITE request was determined to be eligible for implicit affiliation in step 5) and if subclause 8.2.2.3.7 was not previously invoked in the present subclause, shall perform the implicit affiliation as specified in subclause 8.2.2.3.7;
- 13) if the SIP INVITE request contains an emergency indication set to a value of "true" or the in-progress emergency state of the group to "true" the controlling MCVideo function shall:
- a) validate that the SIP INVITE request includes a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in subclause 6.3.3.1.19, and if not:
 - i) perform the actions specified in subclause 6.3.3.1.8;
 - ii) send the SIP UPDATE request generated in subclause 6.3.3.1.8 towards the initiator of the SIP INVITE request according to 3GPP TS 24.229 [11]; and
 - iii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8, proceed with the rest of the steps.

NOTE 3: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress emergency states of the specified group.

- b) if the in-progress emergency state of the group is set to a value of "true" and this MCVideo user is indicating a new emergency indication:
 - i) for each of the other affiliated members of the group generate a SIP MESSAGE request notification of the MCVideo user's emergency indication as specified in subclause 6.3.3.1.11 with the following clarifications:

- A) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";
 - B) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorized request for an MCVideo emergency alert meeting the conditions specified in subclause 6.3.3.1.13.1, perform the procedures specified in subclause 6.3.3.1.12; and
 - C) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];
- ii) cache the information that this MCVideo user has initiated an MCVideo emergency call; and
 - iii) if the SIP INVITE request contains an authorized request for an MCVideo emergency alert as determined in step i) B) above, cache the information that this MCVideo user has initiated an MCVideo emergency alert; and
- c) if the in-progress emergency state of the group is set to a value of "false":
- i) shall set the value of the in-progress emergency state of the group to "true";
 - ii) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in subclause 6.3.3.1.16;
 - iii) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other affiliated and joined participants of the chat MCVideo group as specified in subclause 6.3.3.1.6;
 - iv) shall generate SIP INVITE requests for the MCVideo emergency group call to the affiliated but not joined members of the chat MCVideo group as specified in subclause 6.3.3.1.7;
 - A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - B) upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];
 - v) shall cache the information that this MCVideo user has initiated an MCVideo emergency call; and
 - vi) if the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is set to "true" and is an authorized request for an MCVideo emergency alert as specified in subclause 6.3.3.1.13.1, shall cache the information that this MCVideo user has initiated an MCVideo emergency alert; and
 - vii) if the in-progress imminent peril state of the group is set to a value of "true", shall set it to a value of "false";
- 14) if the in-progress emergency state of the group is set to a value of "false" and if the SIP INVITE request contains an imminent peril indication set to a value of "true" or the in-progress imminent peril state of the group is set to "true", the controlling MCVideo function shall:
- a) validate that the SIP INVITE request includes a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in subclause 6.3.3.1.19, and if not:
 - i) perform the actions specified in subclause 6.3.3.1.8;
 - ii) send the SIP UPDATE request generated in subclause 6.3.3.1.8 towards the initiator of the SIP INVITE request according to 3GPP TS 24.229 [11]; and
 - iii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8 proceed with the rest of the steps.
- NOTE 4: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress imminent peril states of the specified group.
- b) if the in-progress imminent peril state of the group is set to a value of "true" and this MCVideo user is indicating a new imminent peril indication:

- i) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in subclause 6.3.3.1.11 with the following clarifications;
 - A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
 - ii) cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
 - c) if the in-progress imminent peril state of the group is set to a value of "false":
 - i) shall set the value of the in-progress imminent peril state of the group to "true";
 - ii) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other affiliated and joined participants of the chat MCVideo group as specified in subclause 6.3.3.1.15;
 - iii) shall generate SIP INVITE requests for the MCVideo imminent peril call to the affiliated but not joined members of the chat MCVideo group as specified in subclause 6.3.3.1.7;
 - A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - B) Upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
 - iv) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call;
 - 15) shall accept the SIP request and generate a SIP 200 (OK) response to the SIP INVITE request according to 3GPP TS 24.229 [11];
 - 16) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.3.3.2.1 unless the procedures of subclause 6.3.3.1.8 were performed in step 13)a) or step 14)a) above;
 - 17) should include the Session-Expires header field and start supervising the SIP session according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
 - 18) shall include the "timer" option tag in a Require header field;
 - 19) shall include the following in a Contact header field:
 - a) the g.3gpp.mcvideo media feature tag;
 - b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
 - c) the MCVideo session identity; and
 - d) the media feature tag isfocus;
 - 20) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];
 - 21) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorized request for an MCVideo emergency alert as specified in subclause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;
 - 22) if the received SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true" and if the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;
- NOTE 5: In this case, the request was for an imminent peril call but a higher priority MCVideo emergency call was already in progress on the group. Hence, the imminent peril call request aspect of the request is denied but the request is granted with emergency level priority.

- 23) shall interact with media plane as specified in 3GPP TS 24.581 [5];
- 24) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11]; and
- 25) if the chat group session was already ongoing and if at least one of the participants has subscribed to the conference event package, shall send a SIP NOTIFY request to all participants with a subscription to the conference event package as specified in subclause 9.2.3.4.2.

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, and the SIP 200 (OK) response was sent with the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4, the controlling MCVideo function shall follow the procedures in subclause 6.3.3.1.18.

[TS 24.281, clause 9.2.2.4.1.2]

In the procedures in this subclause:

- 1) emergency indication in an incoming SIP re-INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 2) imminent peril indication in an incoming SIP re-INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a SIP re-INVITE request for an MCVideo session identity identifying a chat MCVideo group session, the controlling MCVideo function:

- 1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP re-INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

NOTE 1: if the SIP re-INVITE request contains an emergency indication or an imminent peril indication set to a value of "true" and this is an authorized request for originating an MCVideo emergency group call as determined by subclause 6.3.3.1.13.2, or for originating an MCVideo imminent peril group call as determined by subclause 6.3.3.1.13.5, the controlling MCVideo function can according to local policy choose to accept the request.

- 2) if the received SIP re-INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in subclause 6.3.3.1.17;
- 3) if the SIP re-INVITE request contains an unauthorized request for an MCVideo emergency call as determined by subclause 6.3.3.1.13.2:
 - a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response as specified in subclause 6.3.3.1.14; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true" and is an authorized request to initiate an MCVideo emergency group call as determined by subclause 6.3.3.1.13.2, the controlling MCVideo function shall:
 - a) validate that the SIP re-INVITE request includes a Resource-Priority header field is populated correctly for an MCVideo emergency group call as specified in subclause 6.3.3.1.19, and if not:
 - i) shall perform the actions specified in subclause 6.3.3.1.8; and
 - ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.18 shall proceed with the rest of the steps.

NOTE 2: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress emergency states of the specified group.

- b) if the in-progress emergency state of the group is set to a value of "true" and this MCVideo user is indicating a new emergency indication:

- i) shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency call;
- ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and is an authorized request for an MCVideo emergency alert as determined by subclause 6.3.3.1.13.1, shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency alert; and
- iii) for each of the other affiliated members of the group, generate a SIP MESSAGE request notification of the MCVideo user's emergency indication as specified in subclause 6.3.3.1.11 with the following clarifications:
 - A) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";
 - B) if the received SIP re-INVITE contains an alert indication set to a value of "true" and this is an authorized request for an MCVideo emergency alert meeting the conditions specified in subclause 6.3.3.1.13.1, perform the procedures specified in subclause 6.3.3.1.12; and
 - C) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
- c) if the in-progress emergency state of the group is set to a value of "false":
 - i) shall set the value of the in-progress emergency state of the group to "true";
 - ii) shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency call;
 - iii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and this is an authorized request for an MCVideo emergency alert as specified in subclause 6.3.3.1.13.1, shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency alert;
 - iv) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in subclause 6.3.3.1.16;
 - v) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other affiliated and joined participants of the chat MCVideo group as specified in subclause 6.3.3.1.6. The MCVideo controlling function:
 - A) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - B) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
 - vi) shall generate SIP INVITE requests for the MCVideo emergency group call to the affiliated but not joined members of the chat MCVideo group as specified in subclause 6.3.3.1.7. The controlling MCVideo function:
 - A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - B) Upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
 - vii) if the in-progress imminent peril state of the group is set to a value of "true", shall set it to a value of "false";
- 5) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is an unauthorized request for an MCVideo emergency group call cancellation as determined by subclause 6.3.3.1.13.4:
 - a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response;
 - b) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <emergency-ind> element set to a value of "true";

- c) if an <alert-ind> element of the mcvideoinfo MIME body is included set to "false" and there is an outstanding MCVideo emergency alert for this MCVideo user, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body and <alert-ind> element set to a value of "true"; and
- d) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 6) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is determined to be an authorized request for an MCVideo emergency call cancellation as specified in subclause 6.3.3.1.13.4 and the in-progress emergency state of the group to is set to a value of "true" the controlling MCVideo function shall:
 - a) validate that the SIP re-INVITE request includes a Resource-Priority header field is populated correctly for a normal priority MCVideo group call as specified in subclause 6.3.3.1.19, and if not:
 - i) shall perform the actions specified in subclause 6.3.3.1.8; and
 - ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8 shall proceed with the rest of the steps;

NOTE 3: Verify that the Resource-Priority header is included and properly populated for an in-progress emergency state cancellation of the specified group.

- b) shall set the in-progress emergency group state of the group to a value of "false";
- c) shall clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency group call;
- d) if an <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is included and set to "false" and is determined to be an authorized request for an MCVideo emergency alert cancellation as specified in subclause 6.3.3.1.13.3 and there is an outstanding MCVideo emergency alert for this MCVideo user shall:
 - i) if the received SIP re-INVITE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency alert; and
 - ii) if the received SIP re-INVITE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the sender of the SIP re-INVITE request as having an outstanding MCVideo emergency alert;
- e) shall generate SIP re-INVITE requests to the other affiliated and joined members of the MCVideo group as specified in subclause 6.3.3.1.6. The MCVideo controlling function:
 - i) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 4: Subclause 6.3.3.1.5 will inform the affiliated and joined members of the cancellation of the MCVideo group's in-progress emergency state and the cancellation of the MCVideo emergency alert if applicable.

- f) for each of the affiliated but not joined members of the group shall:
 - i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency call as specified in subclause 6.3.3.1.11;
 - ii) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";
 - iii) if indicated above in step d), set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and
 - iv) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];

- 7) if a Resource-Priority header field is included in the SIP re-INVITE request:
- a) if the Resource-Priority header field is set to the value indicated for emergency calls and the received SIP re-INVITE request does not contain an authorized request for an MCVideo emergency call as determined in step 4) above and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps; or
 - b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the received SIP re-INVITE request does not contain an authorized request for an MCVideo imminent peril call as determined by the procedures of subclause 6.3.3.1.13.5 and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps;
- 8) if the received SIP re-INVITE request contains an imminent peril indication, shall perform the procedures specified in subclause 9.2.2.4.1.3 and skip the rest of the steps;
- 9) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.3.3.2.1 unless the procedures of subclause 6.3.3.1.8 were performed in step 6) a) i) above;
- 10) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];
- 11) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and if this is an unauthorized request for an MCVideo emergency alert as determined by subclause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;
- 12) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false" and if this is an unauthorized request for an MCVideo emergency alert cancellation as determined by subclause 6.3.3.1.13.3, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;
- 13) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true", this is an authorized request for an MCVideo imminent peril group call and if the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;
- NOTE 5: In this case, the request was for an imminent peril call but a higher priority MCVideo emergency call was already in progress on the group. Hence, the imminent peril call request aspect of the request is denied but the request is granted with emergency level priority.
- 14) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and
- 15) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, and the SIP 200 (OK) response was sent with the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4, the controlling MCVideo function shall follow the procedures in subclause 6.3.3.1.18.

[TS 24.281, clause 9.2.2.4.1.3]

In the procedures in this subclause:

- 1) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

When the controlling function receives a SIP re-INVITE request with an imminent peril indication, the controlling function:

- 1) if the SIP re-INVITE request contains an unauthorized request for an MCVideo imminent peril group call as determined by subclause 6.3.3.1.13.5, shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response with the following clarifications:

- a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false"; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 2) if the in-progress emergency group state of the group is set to a value of "false" and if the SIP re-INVITE request contains an imminent peril indication set to a value of "true" or the in-progress imminent peril state of the group to "true", the controlling MCVideo function shall:
- a) validate that the SIP re-INVITE request includes a Resource-Priority header field with the namespace set to the MCVideo-specific namespace and the priority set to the priority designated for imminent peril calls and if not:
 - i) perform the actions specified in subclause 6.3.3.1.8;
 - ii) send the SIP UPDATE request generated in subclause 6.3.3.1.8 towards the initiator of the SIP re-INVITE request according to 3GPP TS 24.229 [11]; and
 - iii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8 proceed with the rest of the steps.

NOTE 3: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress imminent peril states of the specified group.

- b) if the in-progress imminent peril state of the group is set to a value of "true" and this MCVideo user is indicating a new imminent peril indication:
 - i) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in subclause 6.3.3.1.11 with the following clarifications:
 - A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
 - ii) cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
 - c) if the in-progress imminent peril state of the group is set to a value of "false":
 - i) shall set the value of the in-progress imminent peril state of the group to "true";
 - ii) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other affiliated and joined participants of the chat MCVideo group as specified in subclause 6.3.3.1.15;
 - iii) shall generate SIP INVITE requests for the MCVideo imminent peril group call to the affiliated but not joined members of the chat MCVideo group as specified in subclause 6.3.3.1.7;
 - A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - B) Upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
 - iv) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call;
- 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is an unauthorized request for an MCVideo imminent peril group call cancellation as determined by subclause 6.3.3.1.13.6 shall:
- a) reject the SIP re-INVITE request with a SIP 403 (Forbidden) response to the SIP re-INVITE request; and
 - b) include in the SIP 403 (Forbidden) response:

- i) include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false";
 - ii) send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11]; and
 - iii) skip the rest of the steps;
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is determined to be an authorized request for an MCVideo imminent peril call cancellation as specified in subclause 6.3.3.1.13.6 and the in-progress imminent peril state of the group to is set to a value of "true" the controlling MCVideo function shall:
- a) validate that the SIP re-INVITE request includes a Resource-Priority header field with the namespace set to the MCVideo-specific namespace, and the priority set to the priority level designated for a normal priority MCVideo group call, and if not:
 - i) shall perform the actions specified in subclause 6.3.3.1.8; and
 - ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8 shall proceed with the rest of the steps;

NOTE 3: verify that the Resource-Priority header is included and properly populated for an in-progress emergency group state cancellation of the specified group.

- b) shall set the in-progress imminent peril state of the group to a value of "false";
- c) shall cache the information that this MCVideo user no longer has an outstanding MCVideo imminent peril group call;
- d) shall generate SIP re-INVITES requests to the other affiliated and joined members of the MCVideo group as specified in subclause 6.3.3.1.15. The MCVideo controlling function:
 - i) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 4: subclause 6.3.3.1.15 will inform the affiliated and joined members of the cancellation of the MCVideo group's in-progress emergency group state and the cancellation of the MCVideo emergency alert if applicable.

- e) for each of the affiliated but not joined members of the group shall:
 - i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's imminent peril call as specified in subclause 6.3.3.1.11;
 - ii) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and
 - iii) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];
- 5) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.3.3.2.1 unless the procedures of subclause 6.3.3.1.8 were performed in step 2) or 4) above;
- 6) shall include the "norefersub" option tag in a Supported header field according to IETF RFC 4488 [31];
- 7) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];
- 8) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and
- 9) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

[TS 24.281, clause 9.2.2.5.1.2]

Upon receipt of a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and if a chat group call is not ongoing, the non-controlling MCVideo function of an MCVideo group:

NOTE 1: The Contact header field of the SIP INVITE request contains the "isfocus" feature media tag.

- 1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;
- 2) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;
- 3) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:
 - a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or
 - b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- 4) if the partner MCVideo system does not have a mutual aid relationship with the primary MCVideo system identified by the contents of the P-Asserted-Identity, shall reject the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in subclause 4.4, and shall not process the remaining steps;
- 5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];
- 6) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the subclause x.x.x.x before continuing with the rest of the steps;
- 7) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the subclause x.x.x.x;
- 8) shall interact with the media plane as specified in 3GPP TS 24.581 [5] subclause 6.3.5; and

NOTE 2: Resulting media plane processing is completed before the next step is performed.

- 9) shall send a SIP 200 (OK) response to the controlling MCVideo function according to 3GPP TS 24.229 [11].

[TS 24.281, clause 9.2.2.5.1.3]

Upon receipt of a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and if a chat group call is already ongoing, the non-controlling MCVideo function of an MCVideo group:

NOTE 1: The Contact header field of the SIP INVITE request contains the "isfocus" feature media tag.

- 1) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;
- 2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:
 - a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or
 - b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- 3) if the partner MCVideo system does not have a mutual aid relationship with the primary MCVideo system identified by the contents of the P-Asserted-Identity, shall reject the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in subclause 4.4, and shall not process the remaining steps;

- 4) shall cache the content of the SIP INVITE request, if received in the Contact header field and if the specific feature tags are supported;
- 5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];
- 6) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the subclause x.x.x.x before continuing with the rest of the steps;
- 7) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the subclause x.x.x.x;
- 8) shall instruct the media plane to initialise the switch to the non-controlling mode as specified in 3GPP TS 24.581 [5] subclause x.x.x.x;

NOTE 2: Resulting media plane processing is completed before the next step is performed.

- 9) if the media plane provided information about the current speaker(s), cache the information about the current speaker(s); and
- 10) shall send a SIP 200 (OK) response to the controlling MCVideo function according to 3GPP TS 24.229 [11].

Upon receipt of the SIP ACK request, the non-controlling MCVideo function of an MCVideo group:

- 1) if information about a current speaker(s) is cached:
 - a) shall generate a SIP INFO request as specified in subclause x.x.x.x; and
 - b) shall send the SIP INFO request to the controlling MCVideo function as specified in 3GPP TS 24.229 [11];
- 2) shall instruct the media plane to finalise the switch to the non-controlling mode as specified in 3GPP TS 24.581 [5] subclause 6.3.5.3; and

Editor's Note: the need for these media plane procedures is FFS.

- 3) if at least one of the MCVideo clients in the chat group session has a subscription to the conference event package, shall subscribe to the conference event package from the controlling MCVideo function as specified in subclause 9.2.3.5.3.

[TS 24.281, clause 9.2.2.5.1.6]

Upon receipt of a SIP re-INVITE request from an MCVideo client the non-controlling MCVideo function shall act as the controlling MCVideo function and shall perform the actions in subclause 9.2.2.4.1.2.

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the 'Transmission participant state transition diagram for basic transmission control operation';
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or re-joining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and

- c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and

5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is re-joining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.3.2.2]

When an MCVideo call is established a new instance of the transmission control server state machine for 'general transmission control operation' is created.

For each MCVideo client added to the MCVideo call, a new instance of the transmission control server state machine for 'basic transmission control operation towards the transmission participant' is added.

If the optional "mc_queueing" feature is supported and has been negotiated as specified in clause 14, the transmission control server could queue the implicit transmission control request for the media-transmission control entity.

The original initial SIP INVITE request or SIP REFER request to establish an MCVideo chat group call or to re-join an ongoing MCVideo call is not handled as an implicit transmission control request message by the transmission control server unless explicitly stated in the SIP INVITE request or in the SIP REFER request.

The permission to send media to the inviting MCVideo client due to implicit transmission control request is applicable to both confirmed indication and unconfirmed indication.

When the first unconfirmed indication is received from the invited participating MCVideo function (see 3GPP TS 24.281 [2]) the transmission control server optionally can give an early indication to send RTP media packets, to the inviting MCVideo client.

If an early indication to send RTP media packets is given to the inviting MCVideo client, the transmission participant is granted the permission to send media and the MCVideo server buffers RTP media packets received from the MCVideo client at least until the first invited MCVideo client accepts the invitation or until the RTP media packet buffer exceeds its maximum limit to store RTP media packets.

If the MCVideo server does not support or does not allow media buffering then when an early indication to send RTP media packets is not given to the inviting MCVideo client, the transmission participant is granted the permission to send media when the first invited MCVideo client accepts the media.

Before the transmission control server sends the first transmission control message in the MCVideo call, the transmission control server has to assign itself a SSRC identifier to be included in media transmission control messages and quality feedback messages if the MCVideo server is supporting that option. A suitable algorithm to generate the SSRC identifier is described in IETF RFC 3550 [3].

The transmission participant and the transmission control server can negotiate the maximum priority level that the transmission participant is permitted to request. The transmission control server can pre-empt the current sender based on the negotiated maximum priority level that the transmission participant is permitted to request and the priority level included in the Transmission Media Request message.

NOTE: The maximum priority level that a transmission participant can use is negotiated as specified in subclause 14.3.3 and is based on group configuration data retrieved by the controlling MCVideo function from the group management server as described in 3GPP TS 24.481 [12] and service configuration data retrieved by the controlling MCVideo function from the configuration management server as described in 3GPP TS 24.484 [13].

The transmission participant and the transmission control server can negotiate queueing of Transmission requests using the "mc_queueing" fmp attribute as described in clause 14. If queueing is supported and negotiated, the transmission control server queues the transmission control request if a Transmission Media Request message is received when another transmission participant has the transmission and the priority of the current speaker is the same or higher.

[TS 24.581, clause 6.3.4.4.12]

Upon receiving an implicit Transmission request due to an upgrade to an emergency group call or due to an upgrade to imminent peril call, the transmission control arbitration logic in the transmission control server:

1. if counter Cx (Simultaneous transmission video) has not reached its upper limit:
 - a. shall perform the actions specified in the subclause 6.3.4.4.2;
2. if counter Cx (Simultaneous transmission video) has reached its upper limit:
 - a. select one of the transmission participants with permission to send media without the pre-emptive priority or low effective priority;
 - b. shall stop timer T4 (Transmission Grant), if running;
 - c. shall set the Reject Cause field in the Transmission Revoke message to #4 (Media Transmission pre-empted);
 - d. shall enter the 'G: pending Transmission Revoke' state as specified in the subclause 6.3.4.5.2;
 - e. shall insert the transmission participant into the active Transmission request queue to the position in front of all queued requests, if not inserted yet or update the position of the transmission participant in the active Transmission request queue to the position in front of all other queued requests, if already inserted; and
 - f. shall send a Transmission Queue Position Info message to the requesting transmission participant, if negotiated support of queueing Transmission requests as specified in clause 14. The Queue Position Request message:
 - i. shall include the queue position and transmission priority in the Queue Info field; and
 - ii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Transmission Indicator field with appropriate indications.

[TS 24.581, clause 6.3.5.3.9]

When an ongoing session is upgraded to an emergency group call and when the application and signalling plane indicates that a subsequent SDP offer included the "mc_implicit_request" fntp attribute as described in clause 14, the transmission control interface towards the MCVideo client in the transmission control server:

1. shall indicate to the transmission control server arbitration logic that an implicit Transmission request is received due to an upgrade to an emergency group call; and
2. shall remain in the 'U: not permitted and Transmit Idle' state.

[TS 24.581, clause 6.3.5.4.8]

When an ongoing session is upgraded to an emergency group call and when the application and signalling plane indicates that a subsequent SDP offer included the "mc_implicit_request" fntp attribute as specified in clause 14, the transmission control interface towards the MCVideo client in the transmission control server:

1. shall indicate to the transmission control server arbitration logic that an implicit Transmission request is received due to an upgrade to an emergency group call; and
2. shall remain in the 'U: not permitted and Transmit Taken' state.

6.1.2.3.3 Test description

6.1.2.3.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.

- The client is registered for MCVideo.

6.1.2.3.3.2 Test procedure sequence

Table 6.1.2.3.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a chat group call with implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a chat group call with implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3-7	Void	-	-	-	-
8	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	1	P
9	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	1	P
11	Void	-	-	-	-
12	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to upgrade the call to an emergency chat group call?	-	-	2	P
13-15	Void	-	-	-	-
16	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	6, 7	P
17-20	Void	-	-	-	-
21	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	7	P
21A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	1	P
22	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to downgrade the call?	-	-	3	P
23-25	Void	-	-	-	-
26	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	6, 7	P
27-30	Void	-	-	-	-
31	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	7	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
31A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	1	P
32	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to upgrade the call to an imminent peril chat group call?	-	-	4	P
33-35	Void	-	-	-	-
36	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	6, 7	P
37-40	Void	-	-	-	-
41	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	7	P
41A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	1	P
42	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to downgrade the call?	-	-	5	P
43-45	Void	-	-	-	-
46	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	6, 7	P
47-50	Void	-	-	6	P
51	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	7	P
52	Void	-	-	-	-
53	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
53A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CO' as described in TS 37.579-1 [2] Table 5.3B.8.3-1?	-	-	1	P
54	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	8	P
55	Void	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

6.1.2.3.3.3 Specific message contents

Table 6.1.2.3.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.2.3.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.2.3.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3-2			

Table 6.1.2.3.3.3-1A: SDP message in SIP INVITE (Table 6.1.2.3.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.2.3.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.2.3.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition CHAT-GROUP-CALL, INVITE_REFER
--

Table 6.1.2.3.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.1.2.3.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.1.2.3.3.3-3A			

Table 6.1.2.3.3.3-3A: SDP message in SIP 200 (OK) (Table 6.1.2.3.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.2.3.3.3-4..7: Void**Table 6.1.2.3.3.3-8: SIP INVITE from the SS (Step 12, Table 6.1.2.3.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE, MO_CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.2.3.3.3-8A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-9			

**Table 6.1.2.3.3.3-8A: SDP in SIP INVITE
(Table 6.1.2.3.3.3-8, 6.1.2.3.3.3-14, 6.1.2.3.3.3-16, 6.1.2.3.3.3-20)**

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_OFFER

Table 6.1.2.3.3.3-9: MCVideo-Info in SIP INVITE (Table 6.1.2.3.3.3-8)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition CHAT-GROUP-CALL, EMERGENCY-CALL

**Table 6.1.2.3.3.3-10: SIP 200 (OK) from the UE (Steps 12, 22, 32, 42, Table 6.1.2.3.3.2-1;
Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.2.3.3.3-10A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-11			

Table 6.1.2.3.3.3-10A: SDP in SIP 200 (OK) (Table 6.1.2.3.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.1.2.3.3.3-11: MCVideo-Info in SIP 200(OK) (Table 6.1.2.3.3.3-10)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

**Table 6.1.2.3.3.3-11A: Media Transmission Notification from the SS (Step 16, Table 6.1.2.3.3.2-1;
Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition EMERGENCY-CALL

**Table 6.1.2.3.3.3-11B: Transmission Idle from the SS (Step 21A, Table 6.1.2.3.3.2-1;
Step 4, TS 37.579-1 [2] Table 5.3B.10.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition EMERGENCY-CALL

Table 6.1.2.3.3.3-12..13: Void

Table 6.1.2.3.3.3-14: SIP INVITE from the SS (Step 22, Table 6.1.2.3.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE, MO_CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.2.3.3.3-8A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-15			

Table 6.1.2.3.3.3-15: MCVideo-Info in SIP INVITE (Table 6.1.2.3.3.3-14)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition CHAT-GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
emergency-ind	Encrypted <emergency-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
alert-ind	Encrypted <alert-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		

Table 6.1.2.3.3.3-16: SIP INVITE from the SS (Step 32, Table 6.1.2.3.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE, MO_CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.2.3.3.3-8A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-17			

Table 6.1.2.3.3.3-17: MCVideo-Info in SIP INVITE (Table 6.1.2.3.3.3.16)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition CHAT-GROUP-CALL, IMPERIL-CALL				
--	--	--	--	--

Table 6.1.2.3.3.3-17A: Media Transmission Notification from the SS (Step 36, Table 6.1.2.3.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition IMPERIL-CALL				
--	--	--	--	--

Table 6.1.2.3.3.3-17B: Transmission Idle from the SS (Step 41A, Table 6.1.2.3.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition IMPERIL-CALL				
---	--	--	--	--

Table 6.1.2.3.3.3-18..19: Void

Table 6.1.2.3.3.3-20: SIP INVITE from the SS (Step 42, Table 6.1.2.3.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE, MO_CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.2.3.3.3-8A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-21			

Table 6.1.2.3.3.3-21: MCVideo-Info in SIP INVITE (Table 6.1.2.3.3.3-20)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition CHAT-GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
imminentperil-ind	Encrypted <imminentperil-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		

6.1.2.4 On-network / Chat Group Call / Emergency Call / Imminent Peril Call / Client Terminated (CT)

6.1.2.4.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE message from the SS (MCVideo Server) with an
emergency indication for a MCVideo On-demand Emergency Chat Group Call }
  then { the UE (MCVideo Client) displays an indication for the MCVideo Emergency Chat Group Call
to the MCVideo User , and responds to the SS (MCVideo Server) with a SIP 200 (OK) message }
}
```

(2)

```
with { the UE (MCVideo Client) having an ongoing MCVideo Emergency Chat Group Call, with implicit
Reception Control }
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) }
  then {the UE (MCVideo Client) provides media transmission notification to the MCVideo User and,
upon receipt of approval from the user, sends a Receive Media Request message to the SS (MCVideo
Server) and respects the Reception Control imposed by the SS (MCVideo Server) (Media Transmission
Notification, Receive Media Request, Receive Media Response, Transmission Granted, Media Reception
End Request, Media Reception End Response) }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing Emergency Chat Group Call, with implicit Reception
Control and having sent a Receive Media Request message }
ensure that {
  when { the UE (MCVideo Client) receives a Receive Media Response message from the SS ( MCVideo
Server) } then {the UE (MCVideo Client) provides receive media success notification to the
MCVideo User }
}
```

```
    }
```

(4)

```
with { the UE (MCVideo Client) having an ongoing Emergency Chat Group Call, with implicit Reception
Control }
ensure that {
  when {the UE MCVideo Client) receives a Media Reception End Request message from the SS (MCVideo
Server) }
  then { the UE (MCVideo Client) notifies the MCVideo User, and upon receipt of user acceptance,
sends a Media Reception End Response message to the SS (MCVideo Server) }
}
```

(5)

```
with { the UE (MCVideo Client) having an ongoing Emergency Chat Group Call with Automatic
Commencement Mode }
ensure that {
  when { the MCVideo User requests to end the Emergency Chat Group Call, }
  then { the UE (MCVideo Client) sends a SIP BYE message to the SS (MCVideo Server, receives a SIP
200 (OK) message, and leaves the MCVideo session }
}
```

(6)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE message from the SS (MCVideo Server) with an
imminent peril indication for a MCVideo On-demand Imminent Peril Chat Group Call }
  then { the UE (MCVideo Client) displays an indication for the MCVideo Imminent Peril Chat Group
Call to the MCVideo User, and responds to the SS (MCVideo Server) with a SIP 200 (OK) message }
}
```

(7)

```
with { the UE (MCVideo Client) having an ongoing Imminent Peril Chat Group Call, with implicit
Reception Control }
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) }
  then {the UE (MCVideo Client) provides media transmission notification to the MCVideo User and,
upon receipt of approval from the user, sends a Receive Media Request message to the SS (MCVideo
Server) and respects the Reception Control imposed by the SS (MCVideo Server) (Media Transmission
Notification, Receive Media Request, Receive Media Response, Transmission Granted, Media Reception
End Request, Media Reception End Response) }
```

(8)

```
with { the UE (MCVideo Client) having an ongoing Imminent Peril Chat Group Call, with implicit
Reception Control and having sent a Receive Media Request message }
ensure that {
  when { the UE (MCVideo Client) receives a Receive Media Response message from the SS (MCVideo
Server) }
  then {the UE (MCVideo Client) provides receive media success notification to the MCVideo User }
```

(9)

```
with { the UE (MCVideo Client) having an ongoing Imminent Peril Chat Group Call, with implicit
Reception Control }
ensure that {
  when {the UE (MCVideo Client) receives a Media Reception End Request message from the SS (MCVideo
Server) }
  then {the UE (MCVideo Client) notifies the MCVideo User, and upon receipt of user acceptance,
sends a Media Reception End Response message to the SS (MCVideo Server) }
```

(10)

```
with { the UE (MCVideo Client) having an ongoing Imminent Peril Chat Group Call with Automatic
Commencement Mode }
```

```

ensure that {
  when { the MCVideo User requests to end the Emergency Chat Group Call, }
  then { the UE (MCVideo Client) sends a SIP BYE message to the SS (MCVideo Server, receives a SIP
200 (OK) message, and leaves the MCVideo session }
}

```

6.1.2.4.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281, clauses 2, 9.2.2.2.1.2, 9.2.2.2.1.6, 9.2.2.2.2.2, 6.2.6 and TS 24.581, clauses 6.2.5.3.2, 6.2.5.3.3, 6.2.5.4.5. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-14 requirements.

[TS 24.281, clause 9.2.2.2.1.2]

This clause covers both on-demand session and pre-established sessions.

Upon receipt of a SIP re-INVITE request the MCVideo client:

- 1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo emergency group call and an indication that this is an MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - c) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - d) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
 - e) shall set the MCVideo imminent peril group call state to "MIGC 1: imminent-peril-gc-capable";
- 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call; and
 - b) shall set the MCVideo imminent peril group state to "MVIIG 2: in-progress";
- 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "false":
 - i) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and the MCVideo ID of the MCVideo user cancelling the MCVideo emergency alert; and
 - ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:
 - A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and
 - B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user, shall set the MCVideo emergency alert state to "MVEA 1: no-alert";

- c) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and
- d) if the MCVideo emergency group call state of the group is set to "MVEGC 3: emergency-call-granted", shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable";
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call;
 - b) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
 - c) shall set the MCVideo imminent peril group call state to "MIGC 1: imminent-peril-gc-capable";
- 5) may check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.2; and
- 10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11].

[TS 24.281, clause 9.2.2.2.1.6]

This procedure is used for MCVideo emergency and MCVideo imminent peril calls when the MCVideo client is affiliated but not joined to the chat group.

In the procedures in this clause:

- 1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of an initial SIP INVITE request, the MCVideo client:

- 1) may reject the SIP INVITE request if either of the following conditions is met:
 - a) MCVideo client does not have enough resources to handle the call; or
 - b) any other reason outside the scope of this specification;
- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in clause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure and skip the rest of the steps of this clause;

NOTE 1: if the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.

- 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":

- a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element; and
 - iii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - b) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - c) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
 - d) shall set the MCVideo imminent peril group call state to "MVIIG 1: imminent-peril-gc-capable"; otherwise
- 4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
- a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo imminent peril group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo imminent peril group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) should display the MCVideo group identity of the group with the imminent peril condition contained in the <mcvideo-calling-group-id> element; and
 - b) shall set the MCVideo imminent peril group state to "MVIIG 3: in-progress";
- 5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) shall accept the SIP INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the option tag "timer" in a Require header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 9) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 10) shall include the Session-Expires header field in the SIP 200 (OK) response and start the SIP session timer according to IETF RFC 4028 [23]. If no "refresher" parameter was included in the received SIP INVITE request the "refresher" parameter in the Session-Expires header field shall be set to "uas", otherwise shall include a "refresher" parameter set to the value received in the Session-Expires header field the received SIP INVITE request;
- 11) shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.2;
- 12) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and
- 13) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 9.2.2.2.2.2]

Upon receiving a SIP BYE request for releasing the MCVideo chat session, the MCVideo client shall follow the procedures as specified in subclause 6.2.6.

[TS 24.281, clause 6.2.6]

Upon receiving a SIP BYE request, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581[5]; and
- 2) shall send SIP 200 (OK) response towards MCVideo server according to 3GPP TS 24.229 [11].

[TS 24.581, clause 6.2.5.3.2]

Upon receiving the media transmission notification from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
3. shall store the User ID and the SSRC of the user transmitting the media;
4. if the Reception Mode field is set to '0' indicating automatic reception mode:
 - a. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
 - b. shall map the stored User ID and the SSRC of the user transmitting the media with the instance of 'Transmission participant state transition diagram for basic reception control operation' created in step a); and
 - c. shall enter the 'U: has permission to receive' state;
5. may display the details of the incoming media to the user; and
6. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

Upon receiving an indication from the user to request permission to receive media, the transmission participant:

1. shall send the Receive Media Request message toward the transmission control server; The Receive Media Request message:
 - a. if a different priority than the normal priority is required, shall include the Reception Priority field with the priority not higher than negotiated with the transmission control server as specified in subclause 14.3.3; and
 - b. if the receive media request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
3. shall map the stored User ID and the SSRC of the user transmitting the media with instance of 'Transmission participant state transition diagram for basic reception control operation' created in step 2; and
4. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.4.5]

Upon receiving a granted response for Receive media request message, the transmission participant:

1. if the first bit in the subtype of the Receive media response message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '7' (Receive media response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);

2. shall provide receive media success notification to the user;
3. if the Receive Media Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T103 (Receive Media Request); and
5. shall enter the 'U: has permission to receive' state.

6.1.2.4.3 Test description

6.1.2.4.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.2.4.3.2 Test procedure sequence

Table 6.1.2.4.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish an emergency chat group call?	-	-	1	P
2-4	Void	-	-	-	-
5	Check: Does the UE (MCVideo client) notify the user that the emergency chat group call has been established? (NOTE 1)	-	-	1	P
6	Void	-	-	-	-
6A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2, 3	P
6B-6E	Void	-	-	-	-
6F	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	3	P
6G	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	4	P
6H-6I	Void	-	-	-	-
7	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P
9	Void	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish an imminent peril chat group call?	-	-	3	P
11-13	Void	-	-	-	-
14	Check: Does the UE (MCVideo client) notify the user that the imminent peril chat group call has been established? (NOTE 1)	-	-	6	P
14A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	7	P
14B-14E	Void	-	-	-	-
14F	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	8	P
14G	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	4, 9	P
14H-15	Void	-	-	-	-
16	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
17	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	10	P
18	Void	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

6.1.2.4.3.3 Specific message contents

Table 6.1.2.4.3.3-1: SIP INVITE from the SS (Step 1, Table 6.1.2.4.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.2.4.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.4.3.3-2			

Table 6.1.2.4.3.3-1A: SDP in SIP INVITE (Table 6.1.2.4.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER
--

Table 6.1.2.4.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.2.4.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition EMERGENCY-CALL, CHAT-GROUP-CALL
--

Table 6.1.2.4.3.3-3: SIP 200 (OK) from the UE (Steps 3, 10, Table 6.1.2.4.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.2.4.3.3-3A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.4.3.3-4			

Table 6.1.2.4.3.3-3A: SDP in SIP 200 (OK) (Table 6.1.2.4.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.1.2.4.3.3-4: MCVideo-Info in SIP 200 (OK) (Table 6.1.2.4.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.1.2.4.3.3-5: Void

Table 6.1.2.4.3.3-5A: Media Transmission Notification from the SS (Step 6A, Table 6.1.2.4.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition EMERGENCY-CALL
--

Table 6.1.2.4.3.3-5B..5C: Void**Table 6.1.2.4.3.3-5D: Media Reception End Request from the SS (Step 6G, Table 6.1.2.4.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.10.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.3-1, condition DOWNLINK, EMERGENCY-CALL

Table 6.1.2.4.3.3-6: SIP BYE from the UE (Steps 8, 17, Table 6.1.2.4.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.2.1-1, condition MT_CALL

Table 6.1.2.4.3.3-7: Void**Table 6.1.2.4.3.3-8: SIP INVITE from the SS (Step 10, Table 6.1.2.4.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.1.2.4.3.3-8A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.4.3.3-9			

Table 6.1.2.4.3.3-8A: SDP in SIP INVITE (Table 6.1.2.4.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER

Table 6.1.2.4.3.3-9: MCVideo-Info in SIP INVITE (Table 6.1.2.4.3.3-8)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition IMPERIL-CALL, CHAT-GROUP-CALL

Table 6.1.2.4.3.3-10..12: Void**Table 6.1.2.4.3.3-13: Media Transmission Notification from the SS (Step 14A, Table 6.1.2.4.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition IMPERIL-CALL

Table 6.1.2.4.3.3-14..15: Void**Table 6.1.2.4.3.3-16: Media Reception End Request from the SS (Step 14G, Table 6.1.2.4.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.10.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.3-1, condition DOWNLINK, IMPERIL-CALL

6.1.2.5 On-network / Chat Group Call / Emergency Call / Imminent Peril Call / Client Originated (CO)

6.1.2.5.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service }
ensure that {
  when { the MCVideo User requests to establish a MCVideo Emergency Chat Group Call with implicit
Transmission Control}
    then { the UE(MCVideo Client) sends a SIP INVITE message, and, upon receipt of a Transmission
Granted message from the SS MCVideo Server that the call was established, notifies the user and
respects Transmission Control (Transmission Granted, Transmission Control ACK, Transmission End
Request, Transmission End Response) }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing MCVideo Emergency Chat Group Call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Emergency Chat Group Call }
    then { the UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session}
}
```

(3)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service }
ensure that {
  when { the UE(MCVideo Client) requests to establish a MCVideo Imminent Peril Chat Group Call }
    then { the UE(MCVideo Client) requests the establishment of a MCVideo Imminent Peril Chat Group
Call by sending a SIP INVITE message, and, upon receipt of a Transmission Granted message from the
SS (MCVideo Server) that the call was established, notifies the user and respects Transmission
Control ((Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission End
Response) }
}
```

(4)

```
with { UE (MCVideo Client) having an ongoing MCVideo Imminent Peril Chat Group Call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Imminent Peril Chat Group Call }
    then { UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session}
}
```

6.1.2.5.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in TS 24.281 clauses 9.2.2.2.1.1.1, 9.2.2.2.2.1, 6.2.4.1 and TS 24.581 clauses 6.2.4.2.2, 6.2.4.4.6, 6.2.4.5.3, 6.2.4.6.4, 6.2.4.8.26. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-14 requirements.

[TS 24.281, clause 9.2.2.2.1.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo group session using an MCVideo group identity, identifying a chat MCVideo group, the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo chat group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;

- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 7) should include the "timer" option tag in the Supported header field;
- 8) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the refresher parameter is omitted. If included, the refresher parameter shall be set to "uac";
- 9) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

- 10) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 11) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.1.2;
- 12) if the MCVideo client imminent peril group state for this group is set to "MIG 2: in-progress" or "MVG 3: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 13) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "chat";
 - b) the <mcvideo-request-uri> element set to the group identity; and
 - c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client;

NOTE 2: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP INVITE request that is sent by the originating participating MCVideo function.

- 14) shall include in the SIP INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1; and
- 16) shall send the SIP INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and
- 2) if the MCVideo emergency group call state is set to "MEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVGIC 2: imminent-peril-call-requested" or "MVGIC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in subclause 6.2.8.1.4.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or

- 2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.1.13.

[TS 24.281, clause 9.2.2.2.2.1]

When an MCVideo client wants to leave the MCVideo session that has been established using on-demand session, the MCVideo client shall follow the procedures as specified in clause 6.2.4.1.

[TS 24.281, clause 6.2.4.1]

Upon receiving a request from an MCVideo user to leave an MCVideo session established using on-demand session signalling, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11];
- 3) shall set the Request-URI to the MCVideo session identity to leave; and
- 4) shall send a SIP BYE request towards MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request, the MCVideo client shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the 'Transmission participant state transition diagram for basic transmission control operation';
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or rejoining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is rejoining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

[TS 24.581, clause 6.2.4.8.2]

Upon receiving an MCVideo call release step 2 request from the application and signalling, the transmission participant:

1. shall release all resources including any running timers associated with the MCVideo call; and
2. shall enter the 'Start-stop' state and terminate the current instance of the 'Transmission control state machine – basic'.

6.1.2.5.3 Test description

6.1.2.5.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.2.5.3.2 Test procedure sequence

Table 6.1.2.5.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of an emergency chat group call with implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish an emergency chat group call with implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3-8	Void	-	-	-	-
9	Check: Does the UE (MCVideo client) notify the user that the emergency chat group call has been established? (NOTE 1)	-	-	1	P
10	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
11	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1 to end transmission?	-	-	1	P
12-13	Void	-	-	-	-
14	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
15	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P
16	Void	-	-	-	-
17	Make the UE (MCVideo client) request the establishment of an imminent peril chat group call. (NOTE 1)	-	-	-	-
17A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish an imminent peril chat group call with implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	3	P
18-22	Void	-	-	-	-
23	Check: Does the UE (MCVideo client) notify the user that the imminent peril chat group call has been established? (NOTE 1)	-	-	3	P
24	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
25	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1 to end transmission?	-	-	3	P
26-27	Void	-	-	-	-
28	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-

29	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	4	P
30	Void	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

6.1.2.5.3.3 Specific message contents

Table 6.1.2.5.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.2.5.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition EMERGENCY CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.2.5.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.5.3.3-2			

Table 6.1.2.5.3.3-1A: SDP message in SIP INVITE (Table 6.1.2.5.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.2.5.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.2.5.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition EMERGENCY CALL, CHAT-GROUP-CALL, INVITE_REFERER
--

Table 6.1.2.5.3.3-3: SIP 200 (OK) from the SS (Steps 2, 17A, Table 6.1.2.5.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	SDP Message as described in Table 6.1.2.5.3.3-3A			

Table 6.1.2.5.3.3-3A: SDP message in SIP 200 (OK) (Table 6.1.2.5.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.2.5.3.3-4: Transmission Granted from the SS (Step 2, Table 6.1.2.5.3.2-1; Step 6a1, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition EMERGENCY-CALL
--

Table 6.1.2.5.3.3-4A: Transmission Idle from the SS (Step 11, Table 6.1.2.5.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.7.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition EMERGENCY-CALL

Table 6.1.2.5.3.3-5..6: Void

Table 6.1.2.5.3.3-7: SIP INVITE from the UE (Step 17A, Table 6.1.2.5.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.2.5.3.3-7A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.2.5.3.3-8			

Table 6.1.2.5.3.3-7A: SDP message in SIP INVITE (Table 6.1.2.5.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED

Table 6.1.2.5.3.3-8: MCVideo-Info in SIP INVITE (Table 6.1.2.5.3.3-7)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition IMPERIL-CALL, CHAT-GROUP-CALL, INVITE_REFERER

Table 6.1.2.5.3.3-9: Transmission Granted from the SS (Step 21, Table 6.1.2.5.3.2-1; Step 6a1, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition IMPERIL-CALL,

Table 6.1.2.5.3.3-10: Transmission Idle from the SS (Step 25, Table 6.1.2.5.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.7.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition IMPERIL-CALL

6.1.3 Subscription to Conference Event Package

6.1.3.1 On-network / Conference Event Package / Subscription to Conference Event Package / Termination of subscription

6.1.3.1.1 Test Purpose (TP)

```

1)
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo On-demand Pre-arranged Group Call
}
  then { UE (MCVideo Client) requests On-demand Pre-arranged Group Call by sending a SIP INVITE
message, and, after indication from the MCVideo Server that the call was established and receiving a
Transmission Granted message, notifies the user }
}

```

(2)

```

with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { MCVideo User requests to subscribe to the conference event package for the ongoing group
call }
  then { UE (MCVideo Client) sends a SIP SUBSCRIBE message with the Expires header field set to
4294967295 and responds to a SIP NOTIFY message with a SIP 200 (OK) message }
}

```

(3)

```

with { UE (MCVideo Client) having subscribed to the conference event package for the ongoing group
call }
ensure that {
  when { MCVideo User requests to terminate the subscription }
  then { UE (MCVideo Client) sends a SIP SUBSCRIBE message with the Expires header field set to 0
}
}

```

(4)

```

with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call
  when { the MCVideo User) requests to end the On-demand Pre-arranged Group Call }
  then { UE (MCVideo Client) sends a SIP BYE message and leaves the call }
}

```

6.1.3.1.2 Conformance Requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clause 9.2.1.2.1.1, 9.2.3.2, 9.2.1.2.3.1. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.1]

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo prearranged group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in clause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in clause 6.2.8.1.9;
- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in clause 6.2.8.2;
- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;

- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;
- NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.
- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 12) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall include the Resource-Priority header field and comply with the procedures in clause 6.2.8.1.2;
- 13) if the MCVideo client imminent peril group state for this group is set to "MVIC 2: in-progress" or "MVIC 4: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in clause 6.2.8.1.12;
- 14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
- the <session-type> element set to a value of "prearranged";
 - the <mcvideo-request-uri> element set to the group identity;
 - the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and
- NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.
- if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;
- NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.
- NOTE 4: The MCVideo client is informed about temporary groups and regrouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].
- NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.
- 15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.1;
- 16) if an implicit transmission request is required, shall indicate this as specified in clause 6.4; and
- 17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

- shall interact with the user plane as specified in 3GPP TS 24.581 [5] ;
- if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIC 2: imminent-peril-call-requested" or "MVIC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in clause 6.2.8.1.4; and
- may subscribe to the conference event package as specified in clause 9.1.3.1.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or

- 2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in clause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.1.13.

[TS 24.281, clause 9.2.3.2]

A MCVideo client may subscribe to the conference state event package when a group call is ongoing and the ongoing group call is not initiated as a broadcast group call by sending a SIP SUBSCRIBE request to obtain information of the status of a group session.

When subscribing to the conference state event package, the MCVideo client:

- 1) shall generate a SIP SUBSCRIBE request and use a new SIP-dialog according to IETF RFC 6665 [16], IETF RFC 4575 [57] and 3GPP TS 24.229 [11];
- 2) shall set the Request-URI of the SIP SUBSCRIBE request to the MCVideo session identity of the group session;
- 3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];
- 4) shall include an Accept-Contact header with the media feature tag g.3gpp.icsi-ref with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 1: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

- 6) if the MCVideo client wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero;
- 7) shall include an Accept header field containing the application/conference-info+xml MIME type;
- 8) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-request-uri> element set to the MCVideo group ID of the group session; and
- 9) shall send the SIP SUBSCRIBE request using a new SIP dialog according to 3GPP TS 24.229 [11].

The responses to the SIP SUBSCRIBE request shall be handled according to IETF RFC 6665 [16], IETF RFC 4575 [57] and TS 24.229 [11].

Upon receiving a SIP NOTIFY requests to the previously sent SIP SUBSCRIBE request the MCVideo client:

- 1) shall handle the request according to IETF RFC 6665 [16] and IETF RFC 4575 [57]; and
- 2) may display the current state information to the MCVideo client based on the information in the SIP NOTIFY request body.

When needed the MCVideo client shall terminate the subscription and indicate it terminated according to IETF RFC 6665 [16].

NOTE 2: The contents of the received SIP NOTIFY request body is specified in clause 6.3.3.4.

[TS 24.281, clause 9.2.1.2.3.1]

When an MCVideo client wants to leave the MCVideo session that has been established using on-demand session, the MCVideo client shall follow the procedures as specified in clause 6.2.4.1.

6.1.3.1.3 Test description

6.1.3.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.1.3.1.3.2 Test procedure sequence

Table 6.1.3.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a group call with automatic commencement mode and implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a group call with automatic commencement mode and implicit transmission control according to option b.i of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	-
3	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	1	P
4	Make the UE (MCVideo client) subscribe to the conference event package for the ongoing group call to receive the current status and later notifications. (NOTE 1)	-	-	-	-
5-8	Check: Does the UE (MCVideo client) correctly perform steps 2-5 of the procedure 'MCX Subscription and Notification' as described in TS 37.579-1 [2] Table 5.3.29.3-1 to subscribe to the conference event package for the ongoing group call to receive the current status and later notification?	-	-	2	-
9	The SS (MCVideo server) sends conference event package notification update via a SIP NOTIFY message.	<--	SIP NOTIFY	-	-
10	Check: Does the UE (MCVideo client) send a SIP 200 (OK) in response to the SIP NOTIFY message?	-->	SIP 200 (OK)	2	P
11	Make the UE (MCVideo client) de-subscribe from the conference event package. (NOTE 1)	-	-	-	-
12	Check: Does the UE (MCVideo client) send a SIP SUBSCRIBE message with the Expires header field set to 0?	-->	SIP SUBSCRIBE	3	P
13	The SS (MCVideo server) responds with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
14	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
15	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	4	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

6.1.3.1.3.3 Specific message contents

Table 6.1.3.1.3.3-1: SIP INVITE from the UE (Step 2, Table 6.1.3.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.1.3.1.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.3.1.3.3-3			

Table 6.1.3.1.3.3-2: SDP in SIP INVITE (Table 6.1.3.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.1.3.1.3.3-3: MCVideo-Info in SIP INVITE (Table 6.1.3.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, INVITE_REFER

Table 6.1.3.1.3.3-4: SIP 200 (OK) from the SS (Step 2, Table 6.1.3.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.1.3.1.3.3-5			

Table 6.1.3.1.3.3-5: SDP in SIP 200 (OK) (Table 6.1.3.1.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED, IMPLICIT_FLOOR_GRANTED

Table 6.1.3.1.3.3-6: SIP SUBSCRIBE from the UE (Step 5, Table 6.1.3.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.29.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.14-1				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	MCVideo session identity of the group session as provided by the SS in the Contact header field of the SIP 200 OK at call establishment		TS 24.281 [26] clause 9.2.3.2	
Accept-Contact				
ac-value				
feature-param	"g.3gpp.icsi-ref=urn:urn-7:3gpp-service.ims.icsi.mcvideo"		TS 24.281 [26] clause 9.2.3.2	
req-param	"require"		TS 24.281 [26] clause 9.2.3.2	
explicit-param	"explicit"		TS 24.281 [26] clause 9.2.3.2	
Expires				
value	"4294967295"		TS 24.281 [26] clause 9.2.3.2	
Accept				
media-range	"application/conference-info+xml "		TS 24.281 [26] clause 9.2.3.2	
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.3.1.3.3-7			

Table 6.1.3.1.3.3-7: MCVideo-Info in SIP SUBSCRIBE (Table 6.1.3.1.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (NOTE 1) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_Group_A_ID	The URI of the group	TS 24.281 [26] clause 9.2.3.2	
NOTE 1: Encrypted element as described in TS 37.579-1 [2] Table 5.5.3.2.1-2A				

Table 6.1.3.1.3.3-8: SIP 200 (OK) from the SS (Steps 6, 13, Table 6.1.3.1.3.2-1; Step 3, TS 37.579-1 [2] Table 5.3.29.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition SUBSCRIBE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Contact				
addr-spec				
user-info and host	"sip:" & "conference-event-package@cf." & px_MCX_DomainName_Organization_A			
port	not present			

Table 6.1.3.1.3.3-9: SIP NOTIFY from the SS (step 7, Table 6.1.3.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.29.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Identity				
addr-spec				
user-info and host	tsc_MCVideo_PublicSe rviceld_A		TS 24.281 [26] clause 6.3.3.4	
Event				
event-type	"conference"		TS 24.281 [26] clause 6.3.3.4	
Expires				
value	"3600"	3600 seconds	TS 24.281 [26] clause 6.3.3.4	
Subscription-State				
expires	"3600"			
P-Preferred-Service				
Service-ID	"urn:urn-7:3gpp- service.ims.icsi.mcvideo o"		TS 24.281 [26] clause 6.3.3.4	
Message-body				
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp. mcvideo-info+xml"			
Content-ID	Unique id in format of a Message-ID assigned by the SS			
MIME-part-body	MCVideo-Info as described in Table 6.1.3.1.3.3-10			
MIME body part		Conference-Info		
MIME-part-headers				
Content-Type	"application/conference -info+xml"			
Content-ID	Unique id in format of a Message-ID assigned by the SS			
MIME-part-body	Conference-Info as described in Table 6.1.3.1.3.3-11			

Table 6.1.3.1.3.3-10: MCVideo-Info in SIP NOTIFY (Table 6.1.3.1.3.3-9)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-user-id	not present			
mcvideo-calling-group-id	Encrypted (NOTE 1) <mcvideo-calling- group-id> with mcvideoURI set to px_MCVideo_Group_A _ID			
NOTE 1: Encrypted element as described in TS 37.579-1 [2] Table 5.5.3.2.2-2A				

Table 6.1.3.1.3.3-11: Conference-Info in SIP NOTIFY (Table 6.1.3.1.3.3-9)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.15-1				
--	--	--	--	--

Table 6.1.3.1.3.3-12: SIP NOTIFY from the SS (step 9, Table 6.1.3.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Identity				
addr-spec				
user-info and host	tsc_MCVidéo_PublicSe rviceld_A		TS 24.281 [26] clause 6.3.3.4	
Event				
event-type	"conference"		TS 24.281 [26] clause 6.3.3.4	
Expires				
value	"3600"	3600 seconds	TS 24.281 [26] clause 6.3.3.4	
P-Preferred-Service				
Service-ID	"urn:urn-7:3gpp- service.ims.icsi.mcvideo o"		TS 24.281 [26] clause 6.3.3.4	
Message-body				
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp. mcvideo-info+xml"			
Content-ID	Unique id in format of a Message-ID assigned by the SS			
MIME-part-body	MCVideo-Info as described in Table 6.1.3.1.3.3-10			
MIME body part		Conference-Info		
MIME-part-headers				
Content-Type	"application/conference -info+xml"			
Content-ID	Unique id in format of a Message-ID assigned by the SS			
MIME-part-body	Conference-Info as described in Table 6.1.3.1.3.3-13			

Table 6.1.3.1.3.3-13: Conference-Info in SIP NOTIFY (Table 6.1.3.1.3.3-12)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.15-1				
Information Element	Value/remark	Comment	Reference	Condition
conference-info				
users				
user [3]				
endpoint				
status	disconnected			

Table 6.1.3.1.3.3-14: SIP SUBSCRIBE from the UE (step 12, Table 6.1.3.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.14-1, condition re_SUBSCRIBE				
Information Element	Value/remark	Comment	Reference	Condition
Accept-Contact				
ac-value				
feature-param	"+g.3gpp.icsi-ref=urn:urn-7:3gpp-service.ims.icsi.mcvideo"		TS 24.379 [9] clause 10.1.3.2	
req-param	"require"		TS 24.379 [9] clause 10.1.3.2	
explicit-param	"explicit"		TS 24.379 [9] clause 10.1.3.2	
Expires				
value	"0"		TS 24.379 [9] clause 10.1.3.2	
Accept				
media-range	"application/conference-info+xml "		TS 24.379 [9] clause 10.1.3.2	
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.3.1.3.3-7			

Table 6.1.3.1.3.3-15: Void

6.1.4 Remote change of selected group

6.1.4.1 On-network / Remote Change of Selected Group / Selected Group Change of Targeted User / Client Originated (CO)

6.1.4.1.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVIDEO Service }
ensure that {
  when { the MCVideo User requests to send a group selection change request to change the selected
group of a targeted MCVIDEO user to a specific MCVideo group }
  then { UE (MCVideo Client) sends a SIP MESSAGE message and responds to a SIP MESSAGE message
with a SIP 200 (OK) message }
}
```

6.1.4.1.2 Conformance Requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clause 9.2.4.2.1. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.2.4.2.1]

Upon receiving a request from the MCVideo user to send a group selection change request to change the selected group of a targeted MCVideo user to a specific MCVideo group, the MCVideo client:

1) if:

- a) the <RemoteGroupSelectionURIList> element does not exist in the MCVideo user profile document with one or more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]); or
- b) the <RemoteGroupSelectionURIList> element exists in the MCVideo user profile document and the MCVideo ID of the targeted MCVideo user does not match with one of the <entry> elements of the <RemoteGroupSelectionURIList> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]);

then:

- a) should indicate to the requesting MCVideo user that they are not authorised to change the selected MCVideo group of the targeted MCVideo user; and
 - b) shall skip the rest of the steps of the present clause;
- 2) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] with the following clarifications:
- a) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP MESSAGE request;
 - b) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
 - c) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11]; and
 - d) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element containing:
 - i) the <mcvideo-request-uri> set to the MCVideo group identity to be selected by the targeted MCVideo user; and
 - ii) an <anyExt> element containing the <request-type> element set to a value of "group-selection-change-request"; and
 - e) shall insert in the SIP MESSAGE request a MIME resource-lists body with the MCVideo ID of the targeted MCVideo user, according to rules and procedures of IETF RFC 5366 [37];
- 3) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the MCVideo user; and
- 4) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the SIP MESSAGE request, should indicate to the MCVideo user the failure of the sent group selection change request and not continue with the rest of the steps.

Upon receiving a "SIP MESSAGE request for group selection change response for terminating client", the MCVideo client:

- 1) shall determine the success or failure of the sent group selection change request from the value of the <selected-group-change-outcome> element contained in the <anyExt> element of the <mcvideo-Params> element of the <mcvideoinfo> element of the application/vnd.3gpp.mcvideo-info+xml MIME body included in the received SIP MESSAGE request; and
- 2) should indicate to the MCVideo user the success or failure of the sent group selection change request.

6.1.4.1.3 Test description

6.1.4.1.3.1 Pre-test conditions

Same pre-test conditions as for MCPTT test case 6.1.4.1 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

6.1.4.1.3.2 Test procedure sequence

Same test procedure sequence as for MCPTT test case 6.1.4.1 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

6.1.4.1.3.3 Specific message contents

Same specific message contents as for MCPTT test case 6.1.4.1 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"
- Condition MCVIDEO is used for all messages.

6.1.4.2 On-network / Remote Change of Selected Group / Selected Group Change of Targeted User / Client Terminated (CT)

6.1.4.2.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { MCVideo User requests group to discover which groups the MCVideo User is affiliated to and
to subscribe to affiliation status changes for the MCVideo User }
  then { UE (MCVideo Client) sends a SIP SUBSCRIBE message and responds to a SIP NOTIFY message
with a SIP 200 (OK) message }
}
```

(2)

```
with { UE (MCVideo Client) having subscribed to affiliation status changes }
ensure that {
  when { MCVideo User requests to de-affiliate from a group }
  then { UE (MCVideo Client) sends a SIP PUBLISH message and responds to a SIP NOTIFY message with
a SIP 200 (OK) message }
}
```

(3)

```
with { UE (MCVideo Client) having subscribed to affiliation status changes }
ensure that {
  when { UE (MCVideo Client) receives to send a group selection change request to change the
selected group of a targeted MCVideo user to a specific MCVideo group via a SIP MESSAGE message }
  then { UE (MCVideo Client) responds with a SIP 200 (OK) message and initiates affiliation to the
group by sending a SIP PUBLISH message and responds to a SIP NOTIFY message with a SIP 200 (OK)
message }
}
```

(4)

```
with { UE (MCVideo Client) having received a SIP MESSAGE message indicating a group selection change
request }
ensure that {
  when { UE (MCVideo Client) determines that the group selection change is successful }
  then { UE (MCVideo Client) sends the group selection determination via a SIP MESSAGE message }
}
```

6.1.4.2.2 Conformance Requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clause 8.2.1.2, 8.2.1.3, 9.2.4.2.2. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 8.2.1.2]

In order:

- to indicate that an MCVideo user is interested in one or more MCVideo group(s) at an MCVideo client;
- to indicate that the MCVideo user is no longer interested in one or more MCVideo group(s) at the MCVideo client;
- to refresh indication of an MCVideo user interest in one or more MCVideo group(s) at an MCVideo client due to near expiration of the expiration time of an MCVideo group with the affiliation status set to the "affiliated" state received in a SIP NOTIFY request in clause 8.2.1.3;
- to send an affiliation status change request in mandatory mode to another MCVideo user; or
- any combination of the above;

the MCVideo client shall generate a SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12], and IETF RFC 3856 [13].

In the SIP PUBLISH request, the MCVideo client:

- 1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;
- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the MCVideo user;
- 3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];
- 4) if the targeted MCVideo user is interested in at least one MCVideo group at the targeted MCVideo client, shall set the Expires header field according to IETF RFC 3903 [12], to 4294967295;

NOTE 1: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

- 5) if the targeted MCVideo user is no longer interested in any MCVideo group at the targeted MCVideo client, shall set the Expires header field according to IETF RFC 3903 [12], to zero; and
- 6) shall include an application/pdf+xml MIME body indicating per-user affiliation information according to clause 8.3.1. In the MIME body, the MCVideo client:
 - a) shall include all MCVideo groups where the targeted MCVideo user indicates its interest at the targeted MCVideo client;
 - b) shall include the MCVideo client ID of the targeted MCVideo client;
 - c) shall not include the "status" attribute and the "expires" attribute in the <affiliation> element; and
 - d) shall set the <p-id> child element of the <presence> root element to a globally unique value.

The MCVideo client shall send the SIP PUBLISH request according to 3GPP TS 24.229 [11].

[TS 24.281, clause 8.2.1.3]

NOTE 1: The MCVideo UE also uses this procedure to determine which MCVideo groups the MCVideo user successfully affiliated to.

In order to discover MCVideo groups:

- 1) which the MCVideo user at an MCVideo client is affiliated to; or
- 2) which another MCVideo user is affiliated to;

the MCVideo client shall generate an initial SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16].

In the SIP SUBSCRIBE request, the MCVideo client:

- 1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;
- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the targeted MCVideo user;
- 3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];
- 4) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 2: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

- 5) if the MCVideo client wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero; and
- 6) shall include an Accept header field containing the application/pdf+xml MIME type; and
- 7) if requesting MCVideo groups where the MCVideo user is affiliated to at the MCVideo client, shall include an application/simple-filter+xml MIME body indicating per client restrictions of presence event package notification information according to clause 8.3.2.

In order to re-subscribe or de-subscribe, the MCVideo client shall generate an in-dialog SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16]. In the SIP SUBSCRIBE request, the MCVideo client:

- 1) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 3: 4294967295, which is equal to $2^{32}-1$, is the highest value defined for Expires header field in IETF RFC 3261 [15].

- 2) if the MCVideo client wants to de-subscribe, shall set the Expires header field according to IETF RFC 6665 [16], to zero; and
- 3) shall include an Accept header field containing the application/pdf+xml MIME type.

Upon receiving a SIP NOTIFY request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16], if SIP NOTIFY request contains an application/pdf+xml MIME body indicating per-user affiliation information constructed according to clause 8.3.1, then the MCVideo client shall determine affiliation status of the MCVideo user for each MCVideo group at the MCVideo client(s) in the MIME body. If the <p-id> child element of the <presence> root element of the application/pdf+xml MIME body of the SIP NOTIFY request is included, the <p-id> element value indicates the SIP PUBLISH request which triggered sending of the SIP NOTIFY request.

[TS 24.281, clause 9.2.4.2.2]

Upon receiving a "SIP MESSAGE request for group selection change request for terminating client", the MCVideo client:

- 1) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <affiliation-required> element set to a value of "true":
 - a) shall invoke the procedures of clause 8.2.1.2 to affiliate to the MCVideo group identified by the contents of the <mcvideo-calling-group-id> included in the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - b) if the MCVideo client has not already invoked the procedures of clause 8.2.1.3, shall invoke the procedures of clause 8.2.1.3; and
 - c) upon receiving a SIP NOTIFY request including a <p-id> element set to a value matching the <p-id> value included in the SIP PUBLISH request sent in step 1) a) above as specified in clause 8.2.1.3, shall determine if

the affiliation procedure to the MCVideo group identified by the contents of the <mcvideo-calling-group-id> in the received SIP MESSAGE request was successful;

- 2) if the received SIP MESSAGE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <affiliation-required> element set to a value of "true" and the affiliation was successful as determined in step 1) c) above, or if the <affiliation-required> element was not present in the received SIP MESSAGE request:
 - a) shall change the MCVideo client's selected group to the MCVideo group identified by the contents of the <mcvideo-calling-group-id> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body included in the received SIP MESSAGE request; and
 - b) shall determine the success or failure of the change of selected group action;
- 3) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] with the following clarifications:
 - a) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP MESSAGE request;
 - b) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
 - c) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11];
 - d) shall include in an application/resource-lists+xml MIME body, the MCVideo ID contained in the <mcvideo-calling-user-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the received SIP MESSAGE request; and
 - e) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element containing:
 - i) the <mcvideo-request-uri> set to the MCVideo group identity identified by the contents of the <mcvideo-calling-group-id> element contained in the received SIP MESSAGE request; and
 - ii) an <anyExt> element containing:
 - A) the <response-type> element set to a value of "group-selection-change-response";
 - B) if the MCVideo client was able to successfully change the selected group as determined in step 2) b) above, a <selected-group-change-outcome> element set to a value of "success"; and
 - C) if the MCVideo client:
 - I) was required to affiliate to the MCVideo group identified by the contents of the <mcvideo-calling-group-id> in the received SIP MESSAGE request and the affiliation failed as determined in step 1) c); or
 - II) failed to change the selected group as determined in step 2) b);then a <selected-group-change-outcome> element set to a value of "fail";
- 4) should indicate to the MCVideo user the success or failure of the requested change of selected group action;
- 5) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the MCVideo user; and
- 6) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

6.1.4.2.3 Test description

6.1.4.2.3.1 Pre-test conditions

Same pre-test conditions as for MCPTT test case 6.1.4.2 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

6.1.4.2.3.2 Test procedure sequence

Same test procedure sequence as for MCPTT test case 6.1.4.2 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"

6.1.4.2.3.3 Specific message contents

Same specific message contents as for MCPTT test case 6.1.4.2 (TS 37.579-2 [24]) with the following exception(s):

- The term "MCPTT" is replaced with "MCVideo"
- Condition MCVIDEO is used for all messages.

6.2 Private Calls

6.2.1 On-network / Private Call / On-demand / Automatic Commencement Mode / With Transmission Control / Upgrade to Emergency Call / Cancellation of Emergency on User Request / Client Originated (CO)

6.2.1.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised
to initiate/cancel Private and Private Emergency Calls with Automatic Commencement }
ensure that {
  when { the MCVideo User requests the establishment of a MCVideo Private Call, On-demand Automatic
Commencement Mode, no force of Automatic Commencement, applying end-to-end communication security
with Transmission Control }
  then { UE (MCVideo Client) sends a SIP INVITE message requesting Private Call On-demand
Automatic Commencement Mode, applying end-to-end communication security, and offering a media-level
section for a media-transmission control entity, and, after indication from the SS (MCVideo Server)
that Transmission is granted, the UE (MCVideo Client) provides transmission granted notification to
the user, sends an acknowledgement to the SS (MCVideo Server) }
}
```

(2)

```
with { UE (MCVideo Client) having established a MCVideo Private Call, On-demand Automatic
Commencement Mode with Transmission Control }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User }
  then { UE (MCVideo Client) respects the Transmission Control imposed by the MCVideo Server
(Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission End
Response, Transmission Idle) }
}
```

(3)

```
with { UE (MCVideo Client) having established a MCVideo Private Call, On-demand Automatic
Commencement Mode with Transmission Control }
ensure that {
  when { the MCVideo User requests to upgrade the ongoing MCVideo Private Call to a MCVideo
Emergency Private Call with Transmission Control }
}
```

```

    then { UE (MCVideo Client) sends a SIP re-INVITE message requesting Private Emergency Call On-
demand Automatic Commencement Mode offering a media-level section for a media-transmission control
entity and, upon receipt of a SIP 200 (OK) response, considers the call as being upgraded to an
Emergency Private Call }
}

```

(4)

```

with { UE (MCVideo Client) having upgraded a MCVideo Private Call, On-demand Automatic Commencement
Mode with Transmission Control to Emergency Private Call with Transmission Control }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User }
  then { UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo Server)
including override of the invited MCVideo User (who is not in MCVideo emergency state) and applying
Transmission Control confidentiality and integrity protection }
}

```

(5)

```

with { UE (MCVideo Client) having upgraded a MCVideo Private Call, On-demand Automatic Commencement
Mode with Transmission Control to Emergency Private Call with Transmission Control }
ensure that {
  when { the MCVideo User requests to downgrade the ongoing MCVideo Emergency Private Call }
  then { UE (MCVideo Client) sends a SIP re-INVITE request }
  and, upon receipt of a SIP 200 (OK) response, considers the emergency condition ended and the
call being reverted back to MCVideo Private Call }
}

```

(6)

```

with { UE (MCVideo Client) having an ongoing MCVideo Private Call, On-demand Automatic Commencement
Mode with Transmission Control }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Private Call }
  then { UE (MCVideo Client) sends a SIP BYE request and after receiving a SIP 200 (OK) leaves the
MCVideo session }
}

```

6.2.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 10.2.2.2.1, 10.2.2.2.4, 10.2.2.2.5, and in TS24.581, clauses 6.2.5.5.3, 6.2.5.5.3a.. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.1]

Upon receiving a request from an MCVideo user to establish an MCVideo private call the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;

- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];
- 8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:
 - a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
 - c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty-eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of subclause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and
 - g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].
- 9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in subclause 6.2.1 and with a media stream of the offered media-transmission control entity;
- 10) if implicit transmission control is required, shall comply with the conditions specified in subclause 6.4;
- 11) if the MCVideo user is initiating a private call then:
 - a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];
 - b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:
 - i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
 - ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and
 - c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private";
- 12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.3.3; and
- 13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in subclause 6.2.8.3.4; and
- 3) shall notify the user that the call has been successfully established.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or
- 2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 10.2.2.2.4]

This subclause covers on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress emergency condition on an MCVideo emergency private call, the MCVideo client shall generate a SIP re-INVITE request by following the UE session procedures specified in 3GPP TS 24.229 [4], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user is not authorised to cancel the in-progress emergency condition on an MCVideo emergency private call as determined by the procedures of subclause 6.2.8.3.1.2, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress emergency condition on an MCVideo emergency private call; and
 - b) shall skip the remaining steps of the current subclause;
- 2) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by the MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.3.6;
- 3) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by another MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.3.8;
- 4) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.3.3;
- 5) shall include in the SIP re-INVITE request an SDP offer the media parameters as currently established;

NOTE 1: The SIP re-INVITE request can be sent within an on-demand session or a pre-established session associated with an MCVideo group session. If the SIP re-INVITE request is sent within a pre-established session, the media-level section for the offered MCVideo video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

- 6) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [4].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.380 [5];
- 2) shall set the MCVideo emergency private priority state of the MCVideo private call to "MVEPP 1: no-emergency";

- 3) shall set the MCVideo emergency private call state of the call to "MVEPC 1: emergency-pc-capable"; and
- 4) if the MCVideo emergency alert state is set to "MVPEA 4: Emergency-alert-cancel-pending", the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the SIP 2xx response to the SIP request for a priority group call does not contain a Warning header field as specified in subclause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall set the MCVideo emergency alert state to "MVPEA 1: no-alert".

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

- 1) if the SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true", the MCVideo client shall set the MCVideo emergency private priority state as "MVEPP 2: in-progress";
- 2) if the SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element set to a value of "true" and the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall set the MCVideo emergency alert state to "MVPEA 3: emergency-alert-initiated"; and
- 3) if the SIP 4xx response, SIP 5xx response or SIP 6xx response did not contain an application/vnd.3gpp.mcvideo-info+xml MIME body, shall set the MCVideo emergency private priority state as "MVEPP 2: in-progress" and the MCVideo emergency alert (MPEA) state shall revert to its value prior to entering the current procedure.

NOTE 2: If the in-progress emergency private priority state cancel request is rejected, the state of the session does not change, i.e. continues with MCVideo emergency private call level priority.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 10.2.2.2.5]

This subclause covers both on-demand session and pre-established sessions.

Upon receiving a request from an MCVideo user to upgrade the ongoing MCVideo private call to an MCVideo emergency private call, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [4], with the clarifications given below.

- 1) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.3.2;
- 2) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.3.3.
- 3) shall include an SDP offer with the media parameters as currently established according to 3GPP TS 24.229 [4];

NOTE: The SIP re-INVITE request can be sent within an on-demand session or a pre-established session associated with an MCVideo private call. If the SIP re-INVITE request is sent within a pre-established session, the media-level section for the offered MCVideo video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

- 4) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 5) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [4].

On receiving a SIP 2xx response to the SIP re-INVITE request the MCVideo client:

- 1) shall interact with the user plane as specified in 3GPP TS 24.380 [5]; and
- 2) shall perform the actions specified in subclause 6.2.8.3.4.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request, the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7

[TS 24.581, clause 6.3.5.5.3]

Upon receiving a Transmission End Request message from the associated transmission participant, the transmission control interface towards the MCVideo client in the transmission control server:

1. if the first bit in the subtype of the Transmission End Request message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '4' (Transmission End Request); and
 - b. shall include the Source field set to '2' (the controlling MCVideo function is the source);
2. shall forward the Transmission End Request message to the general transmission control operation state machine of the transmission control arbitration logic in the MCVideo server with the first bit in the subtype of the Transmission End Request message set to '0' (Acknowledgment is not required), if not already set; and
3. shall remain in the 'U: permitted' state.

[TS 24.581, clause 6.3.5.5.3a]

Upon receiving a Transmission End Response message from the transmission control server, the transmission control interface towards the MCVideo client in the transmission control server:

1. shall forward the Transmission End Response message to the associated transmission participant; and
2. shall enter the state 'U: not permitted and Transmit Idle'.

6.2.1.3 Test description

6.2.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.2.1.3.2

Test procedure sequence

Table 6.2.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a private call to user B with automatic commencement mode and implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a private call with automatic commencement mode and implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1, 2	P
3-7	Void	-	-	-	-
8	Check: Does the UE (MCVideo client) notify the user that the call has been established? (NOTE 1)	-	-	1	P
8A	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
8B	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	2	P
9	Make the UE (MCVideo client) request upgrade of the call to an emergency private call with implicit transmission request. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session modification' as described in TS 37.579-1 [2] Table 5.3B.11.3-1 to upgrade the call to an emergency private call with implicit transmit media request?	-	-	3, 4	P
11-15	Void	-	-	-	-
16	Check: Does the UE (MCVideo client) notify the user that the call has been upgraded to an emergency private call? (NOTE 1)	-	-	3	P
16A	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
16B	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	2	P
17	Make the UE (MCVideo client) request downgrade of the call to a normal private call. (NOTE 1)	-	-	-	-
18	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session modification' as described in TS 37.579-1 [2] Table 5.3B.11.3-1 to downgrade the call without implicit transmit media request?	-	-	5	P
19-23	Void	-	-	-	-
24	Check: Does the UE (MCVideo client) notify the user that the call has been downgraded? (NOTE 1)	-	-	5	P
25-29	Void	-	-	-	-
30	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
31	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	6	P
32	Void	-	-	-	-
NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.					

6.2.1.3.3 Specific message contents

Table 6.2.1.3.3-1: SIP INVITE from the UE (Step 2, Table 6.2.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.2.1.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.1.3.3-2			

Table 6.2.1.3.3-1A: SDP message in SIP INVITE (Table 6.2.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, PRIVATE-CALL, IMPLICIT_GRANT_REQUESTED
--

Table 6.2.1.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition PRIVATE-CALL, INVITE_REFERER

Table 6.2.1.3.3-3: SIP 200 (OK) from the SS (Step 2, Table 6.2.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.2.1.3.3-3A			

Table 6.2.1.3.3-3A: SDP message in SIP 200 (OK) (Table 6.2.1.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.2.1.3.3-4..5: Void

Table 6.2.1.3.3-6: SIP INVITE from the UE (Step 10, Table 6.2.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.11.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL, EMERGENCY-CALL, re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.2.1.3.3-6A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.1.3.3-7			

Table 6.2.1.3.3-6A: SDP message in SIP INVITE (Table 6.1.1.1.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.2.1.3.3-7: MCVideo-Info in SIP INVITE (Table 6.2.1.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition PRIVATE-CALL, EMERGENCY-CALL, INVITE_REFER

Table 6.2.1.3.3-7A: SIP 200 (OK) from the SS (Step 10, Table 6.2.1.3.2-1; step 3, TS 37.579-1 [2] Table 5.3B.11.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.2.1.3.3-7B			

Table 6.2.1.3.3-7B: SDP message in SIP 200 (OK) (Table 6.2.1.3.3-7A)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.2.1.3.3-8: Void

Table 6.2.1.3.3-9: Transmission Granted from the SS (Step 10, Table 6.2.1.3.2-1; Step 5, TS 37.579-1 [2] Table 5.3B.11.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition ACK, EMERGENCY-CALL

Table 6.2.1.3.3-9A: Transmission Idle from the SS (Step 16B, Table 6.2.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.7.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition EMERGENCY-CALL

Table 6.2.1.3.3-10: SIP INVITE from the UE (Step 18, Table 6.2.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.11.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL, re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.2.1.3.3-10A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.1.3.3-12			

Table 6.2.1.3.3-10A: SDP message in SIP INVITE (Table 6.2.1.3.3-10)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, SDP_OFFER				
--	--	--	--	--

Table 6.2.1.3.3-11: MCVideo-Info in SIP INVITE (Table 6.2.1.3.3-11)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition PRIVATE-CALL, INVITE_REFERER				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
emergency-ind	Encrypted <emergency-ind> with mcvideoBoolean set to false	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.2.1-2		

Table 6.2.1.3.3-11A: SIP 200 (OK) from the SS (Step 18, Table 6.2.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.2.1.3.3-17			

Table 6.2.1.3.3-12..16: Void

Table 6.2.1.3.3-17: SDP message in SIP 200 (OK) (Table 6.2.1.3.3-11A)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER				
---	--	--	--	--

6.2.2 On-network / Private Call / On-demand / Automatic Commencement Mode / With Transmission Control / Upgrade to Emergency Call / Cancellation of Emergency on User request / Client Terminated (CT)

6.2.2.1 Test Purpose (TP)

(1)

with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to receive private and private emergency calls with Automatic Commencement } ensure that {

```

when { the MCVideo User receives a request to establish a MCVideo private call, On-demand Automatic Commencement Mode, no force of Automatic Commencement, applying End-to-end communication security with Transmission Control }
  then { UE (MCVideo Client) responds by sending a SIP 200 (OK) accepting the establishment of the MCVideo private call, On-demand Automatic Commencement Mode applying End-to-end communication security with Transmission Control, and notifies the user of the call establishment }
}

```

(2)

```

with { UE (MCVideo Client) having an ongoing On-demand Automatic Commencement Mode private call with Transmission Control }
ensure that {
  when { the MCVideo User engages in communication with the inviting MCVideo User }
    then { UE (MCVideo Client) respects the Reception Control imposed by the SS (MCVideo Server) (Media Transmission Notification, Receive Media Request, Receive Media Response, Media Reception End Request, Media Reception End Response ) }
}

```

(3)

```

with { UE (MCVideo Client) having an ongoing On-demand Automatic Commencement Mode private call with Transmission Control }
ensure that {
  when { the MCVideo User receives a request for upgrade of the ongoing MCVideo private call to a MCVideo emergency private call with Transmission Control }
    then { UE (MCVideo Client) accepts the request and, upon sending SIP 200 (OK) message, considers the call as being upgraded to emergency private call (emergency private call state = "MEPC 3: emergency-pc-granted") and notifies the MCVideo User of the upgraded call if pc_MCX_DisplayInfoEmergencyCall }
}

```

(4)

```

with { UE (MCVideo Client) having an On-demand Automatic Commencement Mode private call with Transmission Control upgraded to an emergency private call }
ensure that {
  when { the MCVideo User continues communication with the invited MCVideo User }
    then { UE (MCVideo Client) respects the transmission control imposed by the MCVideo Server including being able to handle override requested by the inviting MCVideo user and applying Transmission Control confidentiality and integrity protection }
}

```

(5)

```

with { UE (MCVideo Client) having an On-demand Automatic Commencement Mode private call with Transmission Control that was upgraded to an emergency private call }
ensure that {
  when { the MCVideo User receives a request to cancel the ongoing MCVideo emergency condition on a private call }
    then { UE (MCVideo Client) accepts the request and after sending a SIP 200 (OK) response considers the emergency condition cancelled and the call being reverted back to MCVideo private call and notifies the MCVideo User of the downgraded call, and respects Reception Control (Transmission ) }
}

```

(6)

```

with { UE (MCVideo Client) having an ongoing On-demand Automatic Commencement Mode private call }
ensure that {
  when { the MCVideo User requests to end the Private Call, the UE (MCVideo Client) sends a Transmission End Request message and, upon receiving a Transmission End Response from the SS (MCVideo Server) }
    then { the UE (MCVideo Client) sends a SIP BYE request and the SS (MCVideo Server) responds with a SIP 200 (OK) and leaves the MCVideo session }
}

```

6.2.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 10.2.2.2.1, 10.2.2.2.2, 10.2.2.2.3, 10.2.2.3.1.3, 6.2.3.1.1; in TS 24.581, clause 6.3.5.4.9. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be

understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.1]

Upon receiving a request from an MCVideo user to establish an MCVideo private call the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];
- 8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:
 - a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
 - c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty-eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of subclause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and
 - g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].
- 9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in subclause 6.2.1 and with a media stream of the offered media-transmission control entity;
- 10) if implicit transmission control is required, shall comply with the conditions specified in subclause 6.4;

11) if the MCVideo user is initiating a private call then:

- a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];
- b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:
 - i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
 - ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and
- c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private";

12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.3.3; and

13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in subclause 6.2.8.3.4; and
- 3) shall notify the user that the call has been successfully established.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or
- 2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 10.2.2.2.2]

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if any of the following conditions are met:
 - a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];
 - b) MCVideo client does not have enough resources to handle the call; or
 - c) any other reason outside the scope of this specification;otherwise, continue with the rest of the steps.

NOTE 1: If the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function can choose to accept the request.

- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorized to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this subclause;
- 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
- 4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in subclause 4.4; and
 - e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 2: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

- 5) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.1 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client is willing to answer the call with automatic commencement mode; or

- c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.1 if either of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Upon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVideo client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVideo client:

- 1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and
- 2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVideo client:

- 1) shall follow the procedures in clause 10.2.5.2.

[TS 24.281, clause 10.2.2.2.3]

This subclause covers on-demand session.

Upon receipt of a SIP re-INVITE request for an existing private call session, the MCVideo client shall:

- 1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP re-INVITE request to upgrade this call to an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
- 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":
 - a) should display to the MCVideo user an indication that this is a SIP re-INVITE request to downgrade this emergency private call to a normal priority private call and:
 - i) should display the MCVideo ID of the sender of the SIP re-INVITE request contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "false" should display to the MCVideo user an indication that the MCVideo emergency alert is cancelled;
 - iii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:
 - A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and

- B) if the MCVid ID contained in the <originated-by> element is the MCVid ID of the receiving MCVid user, shall set the MCVid emergency alert state to "MVPEA 1: no-alert";
- b) shall set the MCVid emergency private priority state to "MVEPP 1: no-emergency" for this private call; and
 - c) if the MCVid emergency private call state of the call is set to "MVEPC 3: emergency-call-granted", shall set the MCVid emergency private call state of the call to "MVEPC 1: emergency-pc-capable";
- 3) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 4) may display to the MCVid user the MCVid ID of the inviting MCVid user;

NOTE 1: As this is a re-INVITE for an existing MCVid private call session, there is no attempt made to change the answer-mode from its current state.

- 5) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 6) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;
- 7) shall send the SIP 200 (OK) response towards the MCVid server according to rules and procedures of 3GPP TS 24.229 [11]; and
- 8) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 10.2.2.3.1.3]

This clause covers both on-demand session and pre-established sessions.

Upon receipt of a SIP re-INVITE request for an existing MCVid private call session the participating MCVid function:

- 1) may reject the SIP re-INVITE request depending on the value of the Resource-Priority header field if the Resource-Priority header field is included in the received SIP re-INVITE request according to rules and procedures specified in IETF RFC 4412 [33] and skip the rest of the steps;
- 2) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for originating participating MCVid function" with a SIP 500 (Server Internal Error) response. The participating MCVid function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15];

NOTE 1: If the SIP re-INVITE request contains an emergency indication, the participating MCVid function can choose to accept the request.

- 3) shall determine the MCVid ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request and shall authorise the user;

NOTE 2: The MCVid ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

- 4) shall validate the media parameters and if the MCVid video media codec is not offered in the SIP re-INVITE request shall reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;

NOTE 3: If the received SIP re-INVITE request is received within a pre-established session, associated with an MCVid private call, the media-level section for the offered MCVid video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

- 5) shall generate a SIP re-INVITE request as specified in clause 6.3.2.1.9;

- 6) shall set the <mcvideo-calling-user-id> element in an application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP re-INVITE request to the MCVideo ID of the calling user;
- 7) shall, if the SIP re-INVITE request was received within an on-demand session include in the SIP re-INVITE request an SDP containing the current media parameters used by the existing session;
- 8) shall, if the SIP re-INVITE request was received within a pre-established session, include in the SIP re-INVITE request an SDP offer based upon the previously negotiated SDP for the pre-established session as specified in clause 6.3.2.1.1.2;
- 9) shall include a Resource-Priority header field according to rules and procedures of 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field if included in the SIP re-INVITE request from the MCVideo client; and
- 10) shall forward the SIP re-INVITE request, according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response, the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2;
- 2) if the SIP 200 (OK) response is to be sent within an on-demand session shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 6.3.2.1.2.1;
- 3) if the SIP 200 (OK) response is to be sent within a pre-established session shall include in the SIP 200 (OK) response an SDP answer based upon the previously negotiated SDP for the pre-established session;
- 4) shall include Warning header field(s) received in the incoming SIP 200 (OK) response;
- 5) shall include the P-Asserted-Identity header field received in the incoming SIP 200 (OK) response into the outgoing SIP 200 (OK) response;
- 6) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11]; and
- 7) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

The participating MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [11].

[TS 24.281, clause 6.2.3.1.1]

When performing the automatic commencement mode procedures, the MCVideo client:

- 1) shall accept the SIP INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 2) shall include the option tag "timer" in a Require header field of the SIP 200 (OK) response;
- 3) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 4) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 5) shall include the Session-Expires header field in the SIP 200 (OK) response and start the SIP session timer according to IETF RFC 4028 [23]. The "refresher" parameter in the Session-Expires header field shall be set to "uas";
- 6) shall, if the incoming SIP INVITE request contains a Replaces header field, include in the SDP answer in the SIP 200 (OK) response to the SDP offer the parameters used for the pre-established session identified by the contents of the Replaces header field;
- 7) shall, if the incoming SIP INVITE request does not contain a Replaces header field, include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;

NOTE: In the case of a new emergency call where the terminating client is using a pre-established session, the SIP INVITE request containing a Replaces header is used to replace the pre-established session.

- 8) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11];
- 9) shall, if the incoming SIP INVITE request contains a Replaces header field, release the pre-established session identified by the contents of the Replaces header field; and
- 10) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this subclause and as specified in IETF RFC 5626 [35].

[TS 24.581, clause 6.3.5.4.9]

When a Transmission Grant message is received from the transmission control arbitration logic in the MCVideo server, the transmission control interface towards the MCVideo client in the transmission control server:

1. shall forward the Transmission Grant messages to the associated transmission participant;
2. may set the first bit in the subtype of the Transmission Grant message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1;

NOTE: It is an implementation option to handle the receipt of the Transmission control Ack message and what action to take if the Transmission control Ack message is not received.

3. shall enter the state 'U: permitted' as specified in subclause 6.3.5.5.2.

6.2.2.3 Test description

6.2.2.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.2.2.3.2

Test procedure sequence

Table 6.2.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish a private call with automatic commencement mode?	-	-	1	P
2-4	Void	-	-	-	-
5	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	1	P
6	Void	-	-	-	-
6A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	2	P
7	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to upgrade the call to an emergency private call?	-	-	3	P
8-10	Void	-	-	-	-
11	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	4	P
12	Void	-	-	-	-
-	EXCEPTION: Step 13a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE displays information to the user upon accepting establishment/releasing of Emergency call.	-	-	-	-
13a1	IF pc_MCX_DisplayInfoEmergencyCall THEN Check: Does the UE (McVideo client) notify the user that the call has been upgraded to an emergency private call? (NOTE 1) (NOTE 2)	-	-	3	P
13A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	2	P
14	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to downgrade the call?	-	-	5	P
15-17	Void.	-	-	-	-
18	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	4	P
19	Void	-	-	-	-
-	EXCEPTION: Step 20a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE displays information to the user upon accepting establishment/releasing of Emergency call.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
20a 1	IF pc_MCX_DisplayInfoEmergencyCall THEN Check: Does the UE (MCVideo client) notify the user that the call has been downgraded? (NOTE 1) (NOTE 2)	-	-	5	P
21	Void	-	-	-	-
22	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
22 A	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CO' as described in TS 37.579-1 [2] Table 5.3B.8.3-1?	-	-	6	P
22 B	Void	-	-	-	-
23	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	6	P
24	Void	-	-	-	-
NOTE 1: This action is expected to be done via a suitable implementation dependent MMI. NOTE 2: The display information may include - indication for upgrade of the private call to an emergency private call - the MCVideo ID of the sender of the SIP re-INVITE request.					

6.2.2.3.3 Specific message contents

Table 6.2.2.3.3-1: SIP INVITE from the SS (Step 1, Table 6.2.2.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.2.2.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.2.3.3-2			

Table 6.2.2.3.3-1A: SDP in SIP INVITE (Table 6.2.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER, PRIVATE-CALL
--

Table 6.2.2.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition PRIVATE-CALL

Table 6.2.2.3.3-3: SIP 200 (OK) from the UE (Steps 1, 7, 14, Table 6.2.2.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.2.2.3.3-3A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.2.3.3-3B			

Table 6.2.2.3.3-3A: SDP in SIP 200 (OK) (Table 6.2.2.3.3-AA3)

Derivation Path: TS 37.579-1 [2], 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.2.2.3.3-3B: MCVideo-Info in SIP 200 (OK) (Table 6.2.2.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.2.2.3.3-4: SIP INVITE from the SS (Step 7, Table 6.2.2.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.2.2.3.3-4A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.2.3.3-5			

Table 6.2.2.3.3-4A: SDP in SIP INVITE (Table 6.2.2.3.3-4, Table 6.2.2.3.3-7)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_OFFER, PRIVATE-CALL
--

Table 6.2.2.3.3-5: MCVideo-INFO in SIP INVITE (Table 6.2.2.3.3-5)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition EMERGENCY-CALL, PRIVATE-CALL

Table 6.2.2.3.3-6..6A: Void

Table 6.2.2.3.3-6B: Media Transmission Notification from the SS (Step 11, Table 6.2.2.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition EMERGENCY-CALL NOTE: Condition EMERGENCY-CALL causes Reception Mode to be set to 0 (automatic reception mode)
--

Table 6.2.2.3.3-6C: Media Reception End Request from the SS (Step 13A, Table 6.2.2.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3B.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.3-1, condition EMERGENCY-CALL, DOWNLINK
--

Table 6.2.2.3.3-6D: Transmission Idle from the SS (Step 13A, Table 6.2.2.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.16-1, condition EMERGENCY-CALL

Table 6.2.2.3.3-7: SIP INVITE from the SS (Step 14, Table 6.2.2.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition re_INVITE, PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME part body	SDP Message as described in Table 6.2.2.3.3-4A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.2.3.3-8			

Table 6.2.2.3.3-8: MCVideo-Info in SIP INVITE (Table 6.2.2.3.3-7)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
emergency-ind	Encrypted <emergency-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
alert-ind	Encrypted <alert-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		

Table 6.2.2.3.3-9: Void

Table 6.2.2.3.3-10: SIP BYE from the UE (Step 23, Table 6.2.2.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.2.1-1, condition MT_CALL

Table 6.2.2.3.3-11: Void

6.2.3 On-network / Private Call / On-demand / Automatic Commencement Mode / Without Transmission Control / Client Originated (CO)

6.2.3.1 Test Purpose (TP)

(1)

with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to initiate/cancel private calls with Automatic Commencement }
ensure that {
 when { the MCVideo User requests the establishment of a MCVideo private call, On-demand Automatic Commencement Mode, no force of Automatic Commencement, without Transmission Control }
}

```

then { UE (MCVideo Client) sends a SIP INVITE message requesting On-demand Automatic
Commencement Mode and not offering a media-level section for a media-transmission control entity,
and, after indication from the MCVideo Server that the call was established, notifies the MCVideo
User and, does not apply Transmission Control }
}

```

(2)

```

with { UE (MCVideo Client) having an ongoing On-demand Automatic Commencement Mode private call
without Transmission Control }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo private call }
  then { UE (MCVideo Client) sends a SIP BYE request and, after receiving a SIP 200 (OK), leaves
the MCVideo session }
}

```

6.2.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 10.2.1, 10.2.2.2.1, 10.2.4.1.1.1, 10.2.4.1.1.2, 10.2.4.2.1.1, 10.2.4.2.2.1, 10.2.4.3.1, 6.2.5.1, and 6.3.3.2.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.1]

For on-network, the procedures for private call with transmission control are specified in subclause 10.2.2.

For on-network, the procedures for private call without transmission control are specified in subclause 10.2.3.

For on-network, the procedures for ending the private call initiated by MCVideo client are specified in subclause 10.2.4.

For on-network, the procedures for ending the private call initiated by MCVideo server are specified in subclause 10.2.5.

[TS 24.281, clause 10.2.2.2.1]

Upon receiving a request from an MCVideo user to establish an MCVideo private call the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];

- 8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:
 - a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
 - c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of subclause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and
 - g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].
- 9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in subclause 6.2.1 and with a media stream of the offered media-transmission control entity;
- 10) if implicit transmission control is required, shall comply with the conditions specified in subclause 6.4;
- 11) if the MCVideo user is initiating a private call then:
 - a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];
 - b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:
 - i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
 - ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and
 - c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private";
- 12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.3.3; and
- 13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in subclause 6.2.8.3.4; and

3) shall notify the user that the call has been successfully established.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or
- 2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 10.2.4.1.1.1]

Upon receiving a request from an MCVideo user to release an MCVideo private call session established using on-demand session signalling, the MCVideo client shall follow the procedures as specified in clause 6.2.5.1.

[TS 24.281, clause 10.2.4.1.1.2]

Upon receiving a SIP BYE request for private call session, the MCVideo client shall follow the procedures as specified [TS 24.281, clause 10.2.4.1.1.1]

[TS 24.281, clause 10.2.4.2.1.1]

Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 6.3.2.1.6.

[TS 24.281, clause 10.2.4.2.2.1]

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 6.3.2.2.8.1.

[TS 24.281, clause 10.2.4.3.1]

Upon receiving a SIP BYE request the controlling MCVideo function shall follow the procedures as specified in clause 6.3.3.2.4.

[TS 24.281, clause 6.2.5.1]

When the MCVideo client wants to release an MCVideo session established using on-demand session signalling, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11];
- 3) shall set the Request-URI to the MCVideo session identity to release; and
- 4) shall send a SIP BYE request towards MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request, the MCVideo client shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 6.3.3.2.4]

Upon receiving a SIP BYE request the controlling MCVideo function:

- 1) shall interact with the media plane as specified in subclause 6.3 in 3GPP TS 24.581 [5] for releasing the media plane resource associated with the SIP session towards the MCVideo client;

NOTE: The non-controlling MCVideofunction is also regarded as a MCVideofunction client in a temporary MCVideofunction group session.

- 2) shall generate a SIP 200 (OK) response and send the SIP response towards the MCVideofunction client according to 3GPP TS 24.229 [11];
- 3) shall check the MCVideofunction session release policy as specified in subclause 6.3.8.1 and subclause 6.3.8.2 whether the MCVideofunction session needs to be released for each participant of the MCVideofunction session;
- 4) if release of the MCVideofunction session is required:
 - a) shall perform the procedures as specified in the subclause 6.3.3.1.4 with the clarification that if the received SIP BYE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body, copy the application/vnd.3gpp.mcvideo-info+xml MIME body into the outgoing SIP BYE request; and
- 5) if a release of the MCVideofunction session is not required, shall send a SIP NOTIFY request to all remaining MCVideofunction clients in the MCVideofunction session with a subscription to the conference event package as specified in subclause 9.2.3.4.2.

Upon receiving a SIP 200 (OK) response to the SIP BYE request the controlling MCVideofunction shall interact with the media plane as specified in subclause 6.3 in 3GPP TS 24.581 [5] for releasing media plane resources associated with the SIP session with the MCVideofunction participant.

6.2.3.3 Test description

6.2.3.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideofunction.

6.2.3.3.2 Test procedure sequence

Table 6.2.3.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a private call to user B with automatic commencement mode and without transmission control. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a private call with automatic commencement mode and without transmission control according to option c of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3-5	Void	-	-	-	-
6	Check: Does the UE (MCVideo client) notify the user that the call has been established? (NOTE 1)	-	-	1	P
7	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P
9-10	Void	-	-	-	-

NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.

6.2.3.3.3 Specific message contents

Table 6.2.3.3.3-1: SIP INVITE from the UE (Step 2, Table 6.2.3.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.2.3.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.1.3.3-2			

Table 6.2.3.3.3-1A: SDP message in SIP INVITE (Table 6.2.3.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, PRIVATE-CALL, WITHOUT_TRANSMISSIONCONTROL

Table 6.2.3.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.3.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE_REFER, PRIVATE-CALL

Table 6.2.3.3.3-3: SIP 200 (OK) from the SS (Step 4, Table 6.2.3.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.2.3.3.3-3A			

Table 6.2.3.3.3-3A: SDP Message in SIP 200 (OK) (Table 6.2.3.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, WITHOUT_TRANSMISSIONCONTROL				
--	--	--	--	--

Table 6.2.3.3.3-4.5: Void

6.2.4 On-network / Private Call / On-demand / Automatic Commencement Mode / Without Transmission Control / Client Terminated (CT)

6.2.4.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to receive private and private emergency calls with Automatic Commencement }
ensure that {
  when { the UE (MCVideo Client) receives a request for establishment of a MCVideo private call, On-demand Automatic Commencement Mode, no force of Automatic Commencement, without Transmission Control }
  then { UE (MCVideo Client) sends a SIP 200 (OK) accepting the establishment of an MCVideo private call, On-demand Automatic Commencement Mode and not offering a media-level section for a media-transmission control entity and not applying transmission control }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Private Call with Automatic Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) requests to terminate the ongoing MCVideo Private Call }
  then { the UE (MCVideo Client) sends a SIP BYE request and the SS (MCVideo Server) responds with a SIP 200 (OK) and leaves the MCVideo session }
}
```

6.2.4.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clause 10.2.2.2.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.2]

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if any of the following conditions are met:
 - a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];

- b) MCVideo client does not have enough resources to handle the call; or
- c) any other reason outside the scope of this specification;

otherwise, continue with the rest of the steps.

NOTE 1: If the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function can choose to accept the request.

- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this subclause;
- 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
- 4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in subclause 4.4; and
 - e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 2: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

- 5) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.1 if one of the following conditions are met:

- a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client is willing to answer the call with automatic commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.1 if either of the following conditions are met:
- a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Upon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVideo client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVideo client:

- 1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and
- 2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVideo client:

- 1) shall follow the procedures in subclause 10.2.5.2.

6.2.4.3 Test description

6.2.4.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.2.4.3.2 Test procedure sequence

Table 6.2.4.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish a private call with automatic commencement mode and without transmission control?	-	-	1	P
2-4	Void	-	-	-	-
5	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
6	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P
7-8	Void	-	-	-	-

NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.

6.2.4.3.3 Specific message contents

Table 6.2.4.3.3-1: SIP INVITE from the SS (Step 1, Table 6.2.4.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME-part-body	SDP Message as described in Table 6.2.4.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.4.3.3-2			

Table 6.2.4.3.3-1A: SDP Message in SIP INVITE (Table 6.2.4.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition PRIVATE-CALL, INITIAL_SDP_OFFER, WITHOUT_TRANSMISSIONCONTROL

Table 6.2.4.3.3-2: MCVideo-INFO in SIP INVITE (Table 6.2.4.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition PRIVATE-CALL

Table 6.2.4.3.3-3: SIP 200 (OK) from the UE (Step 1, Table 6.2.4.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME-part-body	SDP Message as described in Table 6.2.4.3.3-3A			
MIME body part		MCVideo-Info		
MIME part body	MCVideo-Info as described in Table 6.2.4.3.3-3B			

Table 6.2.4.3.3-3A: SDP Message in SIP 200 (OK) (Table 6.2.4.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, SDP_ANSWER, WITHOUT_TRANSMISSIONCONTROL

Table 6.2.4.3.3-3B: MCVideo-Info in SIP 200 (OK) (Table 6.2.4.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.2.4.3.3-4: SIP BYE from the UE (Step 6, Table 6.2.4.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.2.1-1, condition MT_CALL

Table 6.2.4.3.3-5: Void

6.2.5 On-network / Private Call / Emergency Private Call / On-demand / Automatic Commencement Mode / Force of Automatic Commencement Mode / Without Transmission Control / Client Originated (CO)

6.2.5.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service including authorisation to
initiate and cancel emergency calls }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo private emergency call, On-
demand, Automatic Commencement Mode, force of Automatic Commencement Mode without Transmission
Control }
  then { UE (MCVideo Client) requests private emergency call establishment without Transmission
Control by sending a SIP INVITE message including a Priv-Answer-Mode header field with the value
"Auto" not offering a media-level section for a media-transmission control entity and, after
indication from the MCVideo Server that the call was established notifies the user and, does not
apply Transmission Control }
}

```

(2)

```

with { UE (MCVideo Client) having established an emergency private call }
ensure that {
  when { the UE (MCVideo User) requests to terminate the ongoing MCVideo emergency private call }
}

```



```
    then { UE (MCVideo Client) sends a SIP BYE request and after receiving a SIP 200 (OK) leaves the
MCVideo session }
    }
```

6.2.5.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 10.2.2.2.1 and 4.6.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.1]

Upon receiving a request from an MCVideo user to establish an MCVideo private call the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];
- 8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:
 - a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
 - c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of subclause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and
 - g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and

- f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].
- 9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in subclause 6.2.1 and with a media stream of the offered media-transmission control entity;
- 10) if implicit transmission control is required, shall comply with the conditions specified in subclause 6.4;
- 11) if the MCVideo user is initiating a private call then:
- a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];
 - b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:
 - i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
 - ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and
 - c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private";
- 12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.3.3; and
- 13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in subclause 6.2.8.3.4; and
- 3) shall notify the user that the call has been successfully established.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or
- 2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS24.281, clause 4.6.2]

MCVideo emergency private calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency private call functionalities are specified in the present document:

- MCVideo emergency private call origination with optional MCVideo emergency alert initiation;
- upgrade of an MCVideo private call to an MCVideo emergency private; and

- cancellation of the MCVideo emergency private call priority.

Key aspects of MCVideo emergency private calls include:

- adjusted EPS bearer priority for both participants whether or not they are both in an emergency condition (i.e. both have their MCVideo emergency state set). This is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43];
- the initiator of the MCVideo emergency private call can override the other MCVideo user in the MCVideo emergency private call unless that user also has their MCVideo emergency state set;
- restoration of normal EPS bearer priority to the call according to system policy (e.g., configured time limit for the emergency priority of an MCVideo emergency private call or cancellation of the emergency condition of the private call);
- restoration of normal transmission control priority participants when the emergency elevated priority is cancelled;
- requires the MCVideo user to be authorised to either originate or cancel an MCVideo emergency private call;
- requires the targeted MCVideo user to be authorised to receive an MCVideo emergency private call;
- requests to originate MCVideo emergency private calls may also include an indication of an MCVideo emergency alert; and
- the originator of the MCVideo emergency private call can request that the call use either manual or automatic commencement mode.

There are a number of states that are key in managing these aspects of MCVideo emergency private calls, which include:

- **MCVideo emergency state (MVES):** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorised MCVideo user. While the MCVideo emergency state is set on the client, all MCVideo group and private calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorised for MCVideo emergency calls on them.
- **MCVideo private emergency alert (MVPEA) state:** this is an internal state of the MCVideo client which in conjunction with the MCVideo emergency private call state aids in managing the MCVideo emergency state and related actions.
- **MCVideo emergency private call (MVEPC) state:** this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.
- **In-progress emergency private call (IPEPC) state:** indicates whether or not there is an MCVideo emergency private call in-progress for the two participants. This state is managed by the controlling MCVideo function. All private calls originated between these two participants when in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator is in an MCVideo emergency state.
- **MCVideo emergency private priority (MVEPP) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency private call state of the private call managed by the controlling MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency private priority state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency private call and is not in the MCVideo emergency state, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency private priority state of the private call (i.e., the two participants), it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

NOTE: The above states and their transitions are described in Annex G.

6.2.5.3 Test description

6.2.5.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.2.5.3.2 Test procedure sequence

Table 6.2.5.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a private emergency call to user B with force of automatic commencement mode and without transmission control. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a private call with automatic commencement mode and without transmission control according to option c of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3-5	Void	-	-	-	-
6	Check: Does the UE (MCVideo client) notify the user that the call has been established? (NOTE 1)	-	-	1	P
7	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P
9-10	Void	-	-	-	-
NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.					

6.2.5.3.3 Specific message contents

Table 6.2.5.3.3-1: SIP INVITE from the UE (Step 2, Table 6.2.5.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Answer-Mode	Not present			
Priv-Answer-Mode				
answer-mode-value	"Auto"			
answer-mode-param	"require"			
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP message as described in Table 6.2.5.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.5.3.3-2			

Table 6.2.5.3.3-1A: SDP Message in SIP INVITE (Table 6.2.5.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, INITIAL_SDP_OFFER, WITHOUT_TRANSMISSIONCONTROL				
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Table 6.2.5.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.5.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition PRIVATE-CALL, INVITE_REFER, EMERGENCY-CALL				
---	--	--	--	--

Table 6.2.5.3.3-3: SIP 200 (OK) from the SS (Step 4, Table 6.2.5.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.2.5.3.3-3A			

Table 6.2.5.3.3-3A: SDP Message in SIP 200 (OK) (Table 6.2.5.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, WITHOUT_TRANSMISSIONCONTROL				
--	--	--	--	--

Table 6.2.5.3.3-4.5: Void

6.2.6 On-network / Private Call / Emergency Private Call / On-demand / Manual Commencement Mode / Force of automatic commencement mode / Without Transmission Control / Client Terminated (CT)

6.2.6.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service including authorisation to
receive an MCVideo private call, the MCVideo Service setting for answering the call is set to Manual
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a request for establishment of an MCVideo emergency
private call, On-demand Manual Commencement Mode, force of Automatic Commencement Mode without
Transmission Control }
    then { UE (MCVideo Client) accepts the call (automatic commencement) by sending a SIP 200 (OK)
message accepting the private emergency call, On-demand Automatic Commencement Mode, not offering a
media-level section for a media-transmission control entity, and, notifies the user if
pc_MCX_DisplayInfoEmergencyCall, }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Private Call }
ensure that {
  when { the UE (MCVideo Client) requests to terminate the ongoing MCVideo Private Call }
    then { the UE (MCVideo Client) sends a SIP BYE request and upon receiving a SIP 200 (OK) from the
SS(MCVideo Server) leaves the MCVideo session }
}
```

6.2.6.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 6.2.3.1.1 and 4.6.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 6.2.3.1.1]

When performing the automatic commencement mode procedures, the MCVideo client:

- 1) shall accept the SIP INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 2) shall include the option tag "timer" in a Require header field of the SIP 200 (OK) response;
- 3) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 4) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 5) shall include the Session-Expires header field in the SIP 200 (OK) response and start the SIP session timer according to IETF RFC 4028 [23]. The "refresher" parameter in the Session-Expires header field shall be set to "uas";
- 6) shall, if the incoming SIP INVITE request contains a Replaces header field, include in the SDP answer in the SIP 200 (OK) response to the SDP offer the parameters used for the pre-established session identified by the contents of the Replaces header field;
- 7) shall, if the incoming SIP INVITE request does not contain a Replaces header field, include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;

NOTE: In the case of a new emergency call where the terminating client is using a pre-established session, the SIP INVITE request containing a Replaces header is used to replace the pre-established session.

- 8) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11];
- 9) shall, if the incoming SIP INVITE request contains a Replaces header field, release the pre-established session identified by the contents of the Replaces header field; and
- 10) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this subclause and as specified in IETF RFC 5626 [35].

[TS24.281, clause 4.6.2]

MCVideo emergency private calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency private call functionalities are specified in the present document:

- MCVideo emergency private call origination with optional MCVideo emergency alert initiation;
- upgrade of an MCVideo private call to an MCVideo emergency private; and
- cancellation of the MCVideo emergency private call priority.

Key aspects of MCVideo emergency private calls include:

- adjusted EPS bearer priority for both participants whether or not they are both in an emergency condition (i.e. both have their MCVideo emergency state set). This is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43];
- the initiator of the MCVideo emergency private call can override the other MCVideo user in the MCVideo emergency private call unless that user also has their MCVideo emergency state set;
- restoration of normal EPS bearer priority to the call according to system policy (e.g., configured time limit for the emergency priority of an MCVideo emergency private call or cancellation of the emergency condition of the private call);
- restoration of normal transmission control priority participants when the emergency elevated priority is cancelled;
- requires the MCVideo user to be authorised to either originate or cancel an MCVideo emergency private call;
- requires the targeted MCVideo user to be authorised to receive an MCVideo emergency private call;
- requests to originate MCVideo emergency private calls may also include an indication of an MCVideo emergency alert; and
- the originator of the MCVideo emergency private call can request that the call use either manual or automatic commencement mode.

There are a number of states that are key in managing these aspects of MCVideo emergency private calls, which include:

- **MCVideo emergency state (MVES):** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorised MCVideo user. While the MCVideo emergency state is set on the client, all MCVideo group and private calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorised for MCVideo emergency calls on them.
- **MCVideo private emergency alert (MVPEA) state:** this is an internal state of the MCVideo client which in conjunction with the MCVideo emergency private call state aids in managing the MCVideo emergency state and related actions.
- **MCVideo emergency private call (MVEPC) state:** this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.

- **In-progress emergency private call (IPEPC) state:** indicates whether or not there is an MCVideo emergency private call in-progress for the two participants. This state is managed by the controlling MCVideo function. All private calls originated between these two participants when in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator is in an MCVideo emergency state.
- **MCVideo emergency private priority (MVEPP) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency private call state of the private call managed by the controlling MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency private priority state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency private call and is not in the MCVideo emergency state, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency private priority state of the private call (i.e., the two participants), it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

NOTE: The above states and their transitions are described in Annex G.

6.2.6.3 Test description

6.2.6.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2 with the following clarifications:
 - In the MCVideo user profile document the <allow-automatic-commencement> element is set to "false", the <allow-manual-commencement> element is set to "true".
NOTE: Both elements would be set to "true" per default according to TS 37.579-1 [2] Table 5.5.8.7-1.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.2.6.3.2 Test procedure sequence

Table 6.2.6.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish a private emergency call with force of automatic commencement mode and without transmission control?	-	-	1	P
2-4	Void	-	-	-	-
-	EXCEPTION: Step 5a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE displays information to the user upon accepting establishment/releasing of Emergency call.	-	-	-	-
5a1	IF pc_MCX_DisplayInfoEmergencyCall THEN Check: Does the UE (MCVideo client) notify the user that the call has been established? (NOTE 1) (NOTE 2)	-	-	1	P
6	Void	-	-	-	-
7	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P
9-10	Void	-	-	-	-
NOTE 1: This action is expected to be done via a suitable implementation dependent MMI. NOTE 2: The display information may include - indication for a request for an MCVideo private call - the MCVideo ID of the originator of the MCVideo private call.					

6.2.6.3.3 Specific message contents

Table 6.2.6.3.3-0: MCVideo User Profile (Preamble, USIM)

Derivation Path: TS 37.579-1 [2], table 5.5.8.7-1.				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-user-profile				
cp:ruleset				
cp:rule				
cp:actions				
allow-automatic-commencement	false			

Table 6.2.6.3.3-1: SIP INVITE from the SS (Step 1, Table 6.2.6.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1))

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition PRIVATE-CALL, EMERGENCY-CALL MANUAL				
Information Element	Value/remark	Comment	Reference	Condition
Answer-Mode	Not present			
Priv-Answer-Mode				
answer-mode-value	"Auto"			
answer-mode-param	"require"			
Message-body				
MIME body part		SDP Message		
MIME-part-body	SDP Message as described in Table 6.2.6.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.6.3.3-2			

Table 6.2.6.3.3-1A: SDP Message in SIP INVITE (Table 6.2.6.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition PRIVATE-CALL, INITIAL_SDP_OFFER, WITHOUT_TRANSMISSIONCONTROL

Table 6.2.6.3.3-2: MCVideo-INFO in SIP INVITE (Table 6.2.6.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition PRIVATE-CALL, EMERGENCY-CALL

Table 6.2.6.3.3-3: SIP 200 (OK) from the UE (Step 3, Table 6.2.6.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1))

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP Message		
MIME-part-body	SDP Message as described in Table 6.2.6.3.3-3A			
MIME body part		MCVideo-Info		
MIME part body	MCVideo-Info as described in Table 6.2.6.3.3-3B			

Table 6.2.6.3.3-3A: SDP Message in SIP 200 (OK) (Table 6.2.6.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER, WITHOUT_TRANSMISSIONCONTROLL

Table 6.2.6.3.3-3B: MCVideo-Info in SIP 200 (OK) (Table 6.2.6.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.2.6.3.3-4: Void

Table 6.2.6.3.3-5: SIP BYE from the UE (Step 8, Table 6.2.6.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.2-1, condition MT_CALL
--

Table 6.2.6.3.3-6: Void

6.2.7 On-network / Private Call / On-demand / Manual Commencement Mode / Without Transmission Control / Client Originated (CO)

6.2.7.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service and authorised to initiate
private calls with manual commencement }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo On-demand Manual Commencement
private call without Transmission Control }
  then { UE (MCVideo Client) requests On-demand Manual Commencement Mode private call
establishment without Transmission Control by sending a SIP INVITE message not offering a media-
level section for a media-transmission control entity and, after indication from the MCVideo Server
that the call was established the UE notifies the user and, does not apply Transmission Control }
}
```

(2)

```
with { UE (MCVideo Client) having established an MCVideo on-demand Manual Commencement private call
without Transmission Control }
ensure that {
  when { the UE( MCVideo User) requests to cancel the ongoing MCVideo on-demand Manual Commencement
private call }
  then { UE (MCVideo Client) sends a SIP BYE request and after receiving a SIP 200 (OK) response
leaves the MCVideo session }
}
```

6.2.7.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 10.2.2.2.1, 4.6.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.1]

Upon receiving a request from an MCVideo user to establish an MCVideo private call the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];
- 8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:
 - a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
 - c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty-eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of subclause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and
 - g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].
- 9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in subclause 6.2.1 and with a media stream of the offered media-transmission control entity;
- 10) if implicit transmission control is required, shall comply with the conditions specified in subclause 6.4;
- 11) if the MCVideo user is initiating a private call then:
 - a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];
 - b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:
 - i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and

- ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and
 - c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private";
- 12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.3.3; and
- 13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in subclause 6.2.8.3.4; and
- 3) shall notify the user that the call has been successfully established.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

- 1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or
- 2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 4.6.2]

MCVideo emergency private calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency private call functionalities are specified in the present document:

- MCVideo emergency private call origination with optional MCVideo emergency alert initiation;
- upgrade of an MCVideo private call to an MCVideo emergency private; and
- cancellation of the MCVideo emergency private call priority.

Key aspects of MCVideo emergency private calls include:

- adjusted EPS bearer priority for both participants whether or not they are both in an emergency condition (i.e. both have their MCVideo emergency state set). This is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43];
- the initiator of the MCVideo emergency private call can override the other MCVideo user in the MCVideo emergency private call unless that user also has their MCVideo emergency state set;

- restoration of normal EPS bearer priority to the call according to system policy (e.g., configured time limit for the emergency priority of an MCVideo emergency private call or cancellation of the emergency condition of the private call);
- restoration of normal transmission control priority participants when the emergency elevated priority is cancelled;
- requires the MCVideo user to be authorized to either originate or cancel an MCVideo emergency private call;
- requires the targeted MCVideo user to be authorized to receive an MCVideo emergency private call;
- requests to originate MCVideo emergency private calls may also include an indication of an MCVideo emergency alert; and
- the originator of the MCVideo emergency private call can request that the call use either manual or automatic commencement mode.

There are a number of states that are key in managing these aspects of MCVideo emergency private calls, which include:

- **MCVideo emergency state (MVES):** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorized MCVideo user. While the MCVideo emergency state is set on the client, all MCVideo group and private calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorized for MCVideo emergency calls on them.
- **MCVideo private emergency alert (MVPEA) state:** this is an internal state of the MCVideo client which in conjunction with the MCVideo emergency private call state aids in managing the MCVideo emergency state and related actions.
- **MCVideo emergency private call (MVEPC) state:** this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.
- **In-progress emergency private call (IPEPC) state:** indicates whether or not there is an MCVideo emergency private call in-progress for the two participants. This state is managed by the controlling MCVideo function. All private calls originated between these two participants when in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator is in an MCVideo emergency state.
- **MCVideo emergency private priority (MVEPP) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency private call state of the private call managed by the controlling MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency private priority state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency private call and is not in the MCVideo emergency state, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency private priority state of the private call (i.e., the two participants), it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

NOTE: The above states and their transitions are described in Annex G.

6.2.7.3 Test description

6.2.7.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.

- UE States at the end of the preamble:
- The UE is in RRC_IDLE state.
- The client is registered for MCVideo.

6.2.7.3.2 Test procedure sequence

Table 6.2.7.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a private call to user B with manual commencement mode and without transmission control. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO private call establishment with manual commencement' as described in TS 37.579.1 [2] Table 5.3.35.3-1 to establish a private call without transmission control?	-	-	1	P
3-5	Void	-	-	-	-
6	Check: Does the UE (MCVideo client) notify the user that the call has been established? (NOTE 1)	-	-	1	P
7	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P
9-10	Void	-	-	-	-

NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.

6.2.7.3.3 Specific message contents

Table 6.2.7.3.3-1: SIP INVITE from the UE (Step 2, Table 6.2.7.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL, MANUAL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP message as described in Table 6.2.7.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.7.3.3-2			

Table 6.2.7.3.3-1A: SDP Message in SIP INVITE (Table 6.2.7.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, INITIAL_SDP_OFFER, WITHOUT_TRANSMISSIONCONTROL

Table 6.2.7.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.7.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition PRIVATE-CALL, INVITE_REFER

Table 6.2.7.3.3-3: SIP 200 (OK) from the SS (Step 4, Table 6.2.7.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.2.7.3.3-3A			

Table 6.2.7.3.3-3A: SDP Message in SIP 200 (OK) (Table 6.2.7.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, WITHOUT_TRANSMISSIONCONTROL
--

Table 6.2.7.3.3-4..5: Void

6.2.8 On-network / Private Call / On-demand / Manual Commencement Mode / Without Transmission Control / Client Terminated (CT)

6.2.8.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service including authorisation to receive a MCVideo private call }
ensure that {
  when { the UE (MCVideo Client) receives a request for establishment of an MCVideo private call,
On-demand Manual Commencement Mode without Transmission Control }
  then { UE (MCVideo Client) notifies the User for the incoming call responding to the Server with a SIP 180 (Ringing) message, and, after the User accepts the call sends to the Server a SIP 200 (OK) message and does not apply Transmission Control }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Private Call with Manual Commencement Mode }
ensure that {
  when { the MCVideo User needs to terminate the ongoing MCVideo Private Call }
  then { the UE (MCVideo Client) sends a SIP BYE request and the SS (MCVideo Server) responds with a SIP 200 (OK) and ends the MCVideo session }
}
```

6.2.8.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 10.2.2.2, 10.2.2.3.1.1, 6.2.3.2.1, and 4.6.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2]

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if any of the following conditions are met:

- a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];
- b) MCVideo client does not have enough resources to handle the call; or
- c) any other reason outside the scope of this specification;

otherwise, continue with the rest of the steps.

NOTE 1: If the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function can choose to accept the request.

- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorized to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this subclause;
 - 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
 - 4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in subclause 4.4; and
 - e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];
- NOTE 2: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.
- 5) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
 - 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;

- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.1 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client is willing to answer the call with automatic commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.1 if either of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Upon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVideo client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVideo client:

- 1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and
- 2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVideo client:

- 1) shall follow the procedures in subclause 10.2.5.2.

[TS 24.281, clause 10.2.2.3.1.1]

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "private", the participating MCVideo function:

- 1) may reject the SIP INVITE request depending on the value of the Resource-Priority header field if the Resource-Priority header field is included in the received SIP INVITE request according to rules and procedures specified in IETF RFC 4412 [33] and shall not continue with the rest of the steps;
- 2) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and shall not continue with the rest of the steps;

NOTE 1: If the received SIP INVITE request contains an emergency indication set to a value of "true", the participating MCVideo function can choose to accept the request.

NOTE 2: If the received SIP INVITE request contains an emergency indication set to a value of "true", the participating MCVideo function can choose to allow an exception to the limit on the number of private calls and accept the request.

- 3) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request and shall authorise the user;

NOTE 3: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in subclause 7.3.

- 4) if the participating MCVideo function cannot find a binding between the public user identity and an MCVideo ID or if the validity period of an existing binding has expired, then the participating MCVideo function shall

reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text set to "141 user unknown to the participating function" in a Warning header field as specified in subclause 4.4, and shall not continue with any of the remaining steps;

- 5) shall:
 - a) if the <session-type> is set to "private", determine that the call is a private call;
- 6) if the call is a:
 - a) private call, determine the public service identity of the controlling MCVideo function for the private call service associated with the originating user's MCVideo ID identity;
- 7) if the participating MCVideo function is unable to identify the controlling MCVideo function for the private call service, it shall reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text "142 unable to determine the controlling function" in a Warning header field as specified in subclause 4.4, and shall not continue with any of the remaining steps;
- 8) if the incoming SIP INVITE request does not contain an application/resource-lists MIME body, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- 9) if the call is a private call and the incoming SIP INVITE request contains an application/resource-lists MIME body with more than one <entry> element, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- 10) if the <allow-private-call> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), indicating that the user identified by the MCVideo ID is not authorized to initiate private calls, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response, with warning text set to "107 user not authorized to make private calls" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- 11) if the call is a private call and:
 - a) if the received SIP INVITE request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] with the value "Auto" and the <allow-automatic-commencement> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]) indicating that the user identified by the MCVideo ID is not authorized to initiate private call with automatic commencement, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "125 user not authorized to make private call with automatic commencement" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
 - b) if the received SIP INVITE request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] with the value "Manual" and the <allow-manual-commencement> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), indicating that the user identified by the MCVideo ID is not authorized to initiate private call with manual commencement, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "126 user not authorized to make private call with manual commencement" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
 - c) if the <PrivateCall> element exists in the MCVideo user profile document with one more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]) and:
 - i) if the "uri" attribute of the <entry> element of the application/resource-lists MIME body does not match with one of the <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]); and

- ii) if configuration is not set in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) that allows the MCVideo user to make a private call to users not contained within the <entry> elements of the <PrivateCall> element;

then:

- i) shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "144 user not authorized to call this particular user" in a Warning header field as specified in subclause 4.4 and shall not continue with the rest of the steps;
- 12) shall validate the media parameters and if the MCVideo video media codec is not offered in the "SIP INVITE request for originating participating MCVideo function" shall reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;
- 13) shall generate a SIP INVITE request as specified in subclause 6.3.2.1.3 with the following clarifications:
- a) if the conditions in step 12) above were executed and the participating MCVideo function determined that the "uri" attribute of only one of the <entry> elements of the application/resource-lists MIME body matched with an <entry> element of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) then the <session-type> in the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request generated in subclause 6.3.2.1.3 is set to "private"; and
 - b) if the conditions in step 12) above were executed, then only the <entry> element(s) of the application/resource-lists MIME body that have a "uri" attribute that matched with an <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) are included in the application/resource-lists MIME body in the SIP INVITE request generated in subclause 6.3.2.1.3;
- 14) shall set the Request-URI to the public service identity of the controlling MCVideo function hosting the private call service as determined by step 6);
- 15) shall set the <mcvideo-calling-user-id> element in an application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;
- 16) if the call is a private call and:
- a) if a Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Manual", shall not include a Priv-Answer-Mode header field in the outgoing SIP INVITE request;
 - b) if the <allow-force-auto-answer> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), and the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Auto", shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "143 not authorized to force auto answer" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
 - c) if the <allow-force-auto-answer> element of the <ruleset> element is present in the MCVideo user profile document with the value "true" (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function, and the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Auto", shall include the Priv-Answer-Mode header field set to a value of "Auto" in the outgoing SIP INVITE request;
 - d) if a Priv-Answer-Mode header field containing the value of "Auto" has not been included in the outgoing SIP INVITE request as specified in step 17) above and the incoming "SIP INVITE request for originating participating MCVideo function" contained an Answer-Mode header field as specified in IETF RFC 5373 [27], then shall populate the Answer-Mode header field of the outgoing SIP INVITE request with the contents of the Answer-Mode header field from the incoming "SIP INVITE request for originating participating MCVideo function";
- 17) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for originating participating MCVideo function", as specified in subclause 6.3.2.1.1.1;

18) shall include a Resource-Priority header field according to rules and procedures of 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field if included in the SIP INVITE request from the MCVideo client; and

19) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11].

Upon receiving a SIP 180 (Ringing) response, the participating MCVideo function:

- 1) shall generate a SIP 180 (Ringing) response to the SIP INVITE request as specified in the subclause 6.3.2.1.5.1;
- 2) shall include the P-Asserted-Identity header field as received in the incoming SIP 180 (Ringing) response;
- 3) shall include Warning header field(s) received in the incoming SIP 180 (Ringing) response; and
- 4) shall forward the SIP 180 (Ringing) response to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response, the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as specified in the subclause 6.3.2.1.5.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer as specified in the subclause 6.3.2.1.2.1;
- 3) shall include Warning header field(s) received in the incoming SIP 200 (OK) response;
- 4) shall include the P-Asserted-Identity header field received in the incoming SIP 200 (OK) response into the outgoing SIP 200 (OK) response;
- 5) shall include an MCVideo session identity mapped to the MCVideo session identity provided in the Contact header field of the received SIP 200 (OK) response;
- 6) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];
- 7) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 8) shall start the SIP session timer according to rules and procedures of IETF RFC 4028 [23].

The participating MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [11].

[TS 24.281, clause 6.2.3.2.1]

When performing the manual commencement mode procedures:

- 1) if the MCVideo user declines the MCVideo session invitation the MCVideo client shall send a SIP 480 (Temporarily Unavailable) response towards the MCVideo server with the warning text set to: "110 user declined the call invitation" in a Warning header field as specified in subclause 4.4, and not continue with the rest of the steps in this subclause.

The MCVideo client:

- 1) shall accept the SIP INVITE request and generate a SIP 180 (Ringing) response according to rules and procedures of 3GPP TS 24.229 [11];
- 2) shall include the option tag "timer" in a Require header field of the SIP 180 (Ringing) response;
- 3) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 180 (Ringing) response;
- 4) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 180 (Ringing) response; and
- 5) shall send the SIP 180 (Ringing) response to the MCVideo server.

When sending the SIP 200 (OK) response to the incoming SIP INVITE request, the MCVideo client shall follow the procedures in subclause 6.2.3.1.1.

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this subclause and as specified in IETF RFC 5626 [35].

[TS 24.281, clause 4.6.2]

MCVideo emergency private calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency private call functionalities are specified in the present document:

- MCVideo emergency private call origination with optional MCVideo emergency alert initiation;
- upgrade of an MCVideo private call to an MCVideo emergency private; and
- cancellation of the MCVideo emergency private call priority.

Key aspects of MCVideo emergency private calls include:

- adjusted EPS bearer priority for both participants whether or not they are both in an emergency condition (i.e. both have their MCVideo emergency state set). This is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43];
- the initiator of the MCVideo emergency private call can override the other MCVideo user in the MCVideo emergency private call unless that user also has their MCVideo emergency state set;
- restoration of normal EPS bearer priority to the call according to system policy (e.g., configured time limit for the emergency priority of an MCVideo emergency private call or cancellation of the emergency condition of the private call);
- restoration of normal transmission control priority participants when the emergency elevated priority is cancelled;
- requires the MCVideo user to be authorized to either originate or cancel an MCVideo emergency private call;
- requires the targeted MCVideo user to be authorized to receive an MCVideo emergency private call;
- requests to originate MCVideo emergency private calls may also include an indication of an MCVideo emergency alert; and
- the originator of the MCVideo emergency private call can request that the call use either manual or automatic commencement mode.

There are a number of states that are key in managing these aspects of MCVideo emergency private calls, which include:

- **MCVideo emergency state (MVES):** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorized MCVideo user. While the MCVideo emergency state is set on the client, all MCVideo group and private calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorized for MCVideo emergency calls on them.
- **MCVideo private emergency alert (MVPEA) state:** this is an internal state of the MCVideo client which in conjunction with the MCVideo emergency private call state aids in managing the MCVideo emergency state and related actions.
- **MCVideo emergency private call (MVEPC) state:** this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.
- **In-progress emergency private call (IPEPC) state:** indicates whether or not there is an MCVideo emergency private call in-progress for the two participants. This state is managed by the controlling MCVideo function. All private calls originated between these two participants when in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator is in an MCVideo emergency state.
- **MCVideo emergency private priority (MVEPP) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency private call state of the private call managed by the controlling

MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency private priority state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency private call and is not in the MCVideo emergency state, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency private priority state of the private call (i.e., the two participants), it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

NOTE: The above states and their transitions are described in Annex G.

6.2.8.3 Test description

6.2.8.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.2.8.3.2 Test procedure sequence

Table 6.2.8.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT private call establishment with manual commencement' as described in TS 37.579-1 [2] Table 5.3.6.3-1 to establish a private call without transmission control?	-	-	1	P
2-6	Void	-	-	-	-
7	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P
9-10	Void	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

6.2.8.3.3 Specific message contents

Table 6.2.8.3.3-1: SIP INVITE from the SS (Step 1, Table 6.2.8.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.6.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition MANUAL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP message as described in Table 6.2.8.3.3-1A			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.8.3.3-2			

Table 6.2.8.3.3-1A: SDP Message in SIP INVITE (Table 6.2.8.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition PRIVATE-CALL, INITIAL_SDP_OFFER, WITHOUT_TRANSMISSIONCONTROL

Table 6.2.8.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.8.3.3-1)Void

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2, condition PRIVATE-CALL

Table 6.2.8.3.3-3..3B: Void**Table 6.2.8.3.3-4: SIP 200 (OK) from the UE (Step 5, Table 6.2.8.3.2-1; Step 6, TS 37.579-1 [2] Table 5.3.6.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP Message	As described in Table 6.2.8.3.3-4A			

Table 6.2.8.3.3-4A: SDP Message in SIP 200 (OK) (Table 6.2.8.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, SDP_ANSWER, WITHOUT_TRANSMISSIONCONTROL

Table 6.2.8.3.3-5: SIP BYE from the UE (Step 8, Table 6.2.8.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.2.1-1, condition MT_CALL

Table 6.2.8.3.3-5A..6: Void

6.3 Emergency Alert

6.3.1 On-network / Emergency alert / Cancel emergency alert / Client Originated (CO)

6.3.1.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate an emergency alert }
ensure that {
  when { the MCVideo User requests to send an emergency alert with the location of emergency }
  then { UE (MCVideo Client) sends a SIP MESSAGE initiating an emergency alert and reporting
location information }
}
```

(2)

```
with { UE (MCVideo Client) in the "MVEA 3: emergency-alert-initiated" state}
ensure that {
  when { the MCVideo User requests to cancel the emergency alert}
  then { UE (MCVideo Client) sends a SIP MESSAGE requesting the cancelation of the emergency
alert}
}
```

6.3.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281, clauses 11.2.1.1, 11.2.1.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281 clause 11.2.1.1]

Upon receiving a request from the MCVideo user to send an MCVideo emergency alert to the indicated MCVideo group and this is an authorised request for an MCVideo emergency alert as determined by clause 6.2.8.1.6, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33] with the clarifications given below.

NOTE 1: this SIP MESSAGE request is assumed to be sent out-of-dialog.

The MCVideo client:

- 1) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [9] in the SIP MESSAGE request;
- 2) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [6];
- 3) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 4) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <mcvideo-request-uri> element set to the group identity;
 - b) the <alert-ind> element set to a value of "true"; and
 - c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client;

- 5) shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body as specified in Annex F.3 with a <Report> element included in the <location-info> root element;
- 6) shall include in the <Report> element the specific location information configured for the MCVideo emergency alert location trigger;
- 7) shall set the MCVideo emergency state if not already set;
- 8) shall set the MCVideo emergency alert state to "MVEA 2: emergency-alert-confirm-pending";
- 9) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the group identity; and
- 10) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP MESSAGE request, the MCVideo client shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated".

On receiving a SIP 4xx response a SIP 5xx response or a SIP 6xx response to the SIP MESSAGE request, the MCVideo client shall set the MCVideo emergency alert state to "MVEA 1: no-alert".

NOTE 2: the MCVideo emergency state is left set in this case as the MCVideo user presumably is in the best position to determine whether or not they are in a life-threatening condition. The assumption is that the MCVideo user can clear the MCVideo emergency state manually if need be.

[TS 24.281 clause 11.2.1.2]

Upon receiving a request from the MCVideo user to send an MCVideo emergency alert cancellation to the indicated MCVideo group and this is an authorised request for an MCVideo emergency alert cancellation as determined by clause 6.2.8.1.6, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33] with the clarifications given below.

NOTE 1: This SIP MESSAGE request is assumed to be sent out-of-dialog.

The MCVideo client:

- 1) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [9] in the SIP MESSAGE request;
- 2) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [6];
- 3) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing the public user identity of the originator as specified in 3GPP TS 24.229 [11];
- 4) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <mcvideo-request-uri> element set to the MCVideo group identity;
 - b) the <alert-ind> element set to a value of "false"; and
 - c) if the MCVideo user is cancelling an MCVideo emergency alert originated by another MCVideo user, include the <originated-by> element set to the MCVideo ID of the MCVideo user who originated the MCVideo emergency alert;
- 5) if the MCVideo user has additionally requested the cancellation of the in-progress emergency state of the MCVideo group and this is an authorised request for an in-progress emergency group state cancellation as determined by clause 6.2.8.1.7, shall include an <emergency-ind> element set to a value of "false" in the <mcvideoinfo> element containing the <mcvideo-Params> element;
- 6) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the group identity;

- 7) if the generated SIP MESSAGE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall set the MCVideo emergency alert state to "MVEA 4: Emergency-alert-cancel-pending"; and
- 8) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

On receipt of a SIP MESSAGE request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind-rcvd> element set to true and an <mcvideo-client-id> matching the MCVideo client ID included in the sent SIP MESSAGE request:

- 1) if the <alert-ind> element is set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body of the received SIP MESSAGE request and the sent SIP MESSAGE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall:
 - a) set the MCVideo emergency alert state to "MVEA 1: no-alert"; and
 - b) clear the MCVideo emergency state if not already cleared;
- 2) if the <alert-ind> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the received SIP MESSAGE request is set to a value of "true" and if the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending" and the sent SIP MESSAGE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and

NOTE 2: It would appear to be an unusual situation for the initiator of an MCVideo emergency alert to not be able to clear their own alert. Nevertheless, an MCVideo user can be configured to be authorised to initiate MCVideo emergency alerts but not have the authority to clear them. Hence, the case is covered here.

- 3) if an <emergency-ind> element is present in the application/vnd.3gpp.mcvideo-info+xml MIME body of received SIP MESSAGE request and is set to a value of "false":
 - a) shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable"; and
 - b) shall set the MCVideo emergency group state of the group to "MVEG 1: no-emergency".

NOTE 3: The case where an <emergency-ind> element is set to true is possible but not handled specifically above as it results in no state changes.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the sent SIP MESSAGE request:

- 1) if the received SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <alert-ind> element set to a value of "true", the sent SIP MESSAGE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and

NOTE 4: In this case, an <emergency-ind> element would either not be present or would be set to true. In either case, no change in state would result. Hence, this case is not specified above.

- 2) if the received SIP 4xx response, SIP 5xx response or a SIP 6xx response to the SIP MESSAGE request does not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element, the sent SIP MESSAGE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated".

6.3.1.3 Test description

6.3.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.3.1.3.2 Test procedure sequence

Table 6.3.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) send an emergency alert. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX SIP MESSAGE Request - Accept CO' as described in TS 37.579-1 [2] Table 5.3.30.3-1 to request an emergency alert providing location information?	-	-	1	P
3	Make the UE (MCVideo client) cancel the emergency alert. (NOTE 1)	-	-	-	-
4	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX SIP MESSAGE Request - Accept CO' as described in TS 37.579-1 [2] Table 5.3.30.3-1 to cancel the emergency alert?	-	-	2	P

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.3.1.3.3 Specific message contents

Table 6.3.1.3.3-1: SIP MESSAGE from the UE(step 2, Table 6.3.1.3.2-1; step 2, TS 37.579-1 [2] Table 5.3.30.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1, condition LOCATION-INFO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.3.1.3.3-2			
MIME body part		Location-info		
MIME-part-body	Location-info as described in Table 6.3.1.3.3-2A			

Table 6.3.1.3.3-2: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_Group_A_ID	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.2.1-2		
alert-ind	Encrypted <alert-ind> with mcvideoBoolean set to true	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.2.1-2		
mcvideo-client-id	encrypted <mcvideo-client-id> with mcvideoString set to the UE's UUID URN	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.2.1-2		

Table 6.3.1.3.3-2A: Location-Info in SIP MESSAGE (Table 6.3.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.1-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Report				
CurrentLocation				
CurrentCoordinate				
longitude	Encrypted <longitude> with any content	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
latitude	Encrypted <latitude> with any content	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		

Table 6.3.1.3.3-3: SIP MESSAGE from the SS (step 2, Table 6.3.1.3.2-1; step 4, TS 37.579-1 [2] Table 5.3.30.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1, condition ACCEPT-CONTACT-WITH-MEDIA-FEATURE-TAG				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.3.1.3.3-4			

Table 6.3.1.3.3-4: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-user-id	not present			
alert-ind	Encrypted <alert-ind> with mcvideoBoolean set to true	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
mcvideo-client-id	Encrypted <mcvideo-client-id> with mcvideoString set to the client-id as received from the UE	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
alert-ind-rcvd	true			

Table 6.3.1.3.3-5: SIP MESSAGE from the UE (step 4, Table 6.3.1.3.2-1; step 2, TS 37.579-1 [2] Table 5.3.30.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.3.1.3.3-6			

Table 6.3.1.3.3-6: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-5)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_Group_A_ID	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.2.1-2		
alert-ind	Encrypted <alert-ind> with mcvideoBoolean set to false	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.2.1-2		
mcvideo-client-id	encrypted <mcvideo-client-id> with mcvideoString set to the UE's UUID URN	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.2.1-2		

Table 6.3.1.3.3-7: SIP MESSAGE from the SS (step 4, Table 6.3.1.3.2-1; step 4, TS 37.579-1 [2] Table 5.3.30.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1, condition ACCEPT-CONTACT-WITH-MEDIA-FEATURE-TAG				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.3.1.3.3-8			

Table 6.3.1.3.3-8: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-7)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-user-id	not present			
alert-ind	Encrypted <alert-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
mcvideo-client-id	Encrypted <mcvideo-client-id> with mcvideoString set to the client-id as received from the UE	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
alert-ind-rcvd	true			

6.3.2 On-network / Emergency Alert / Emergency alert origination / Emergency alert cancellation / Client Terminated (CT)

6.3.2.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate an emergency alert }
ensure that {
  when { UE (MCVideo Client) receives an emergency alert via s SIP MESSAGE message with the <alert-
ind> element in the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of either "true"
or "false" }
  then { UE (MCVideo Client) responds by sending a SIP 200 (OK) message }
}

```

6.3.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281, clauses 11.2.1.1, 11.2.1.3. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281 clause 11.2.1.3]

Upon receipt of a "SIP MESSAGE request for emergency notification", the MCVideo client:

- 1) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information, including:
 - a) the MCVideo group identity contained in <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body;
 - b) the originator of the MCVideo emergency alert contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - c) the mission critical organization of the MCVideo emergency alert originator contained in the <mc-org> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;

NOTE 1: This is the case of the MCVideo client receiving the notification of another MCVideo user's emergency alert.

- 2) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false":

- a) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and associated information, including:
 - i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body;
 - ii) the originator of the MCVideo emergency alert contained in:
 - A) if present, the <originated-by> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; or
 - B) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- b) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user, shall set the MCVideo emergency alert state to "MVEA 1: no-alert"; and
- c) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element is set to a value of "false":
 - i) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and
 - ii) shall set the MCVideo emergency group call state to "MVEGC 1: emergency-gc-capable";

NOTE 2: This is the case of the MCVideo client receiving the notification of the cancellation by a third party of an MCVideo emergency alert. This can be the MCVideo emergency alert of another MCVideo user or the MCVideo emergency alert of the recipient, as determined by the contents of the <originated-by> element. Optionally, notification of the cancellation of the in-progress emergency state of the MCVideo group can be included.

- 3) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication of the additional emergency MCVideo user participating in the MCVideo emergency group call including the following if not already displayed as part of step 1):
 - i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - b) shall set the MCVideo emergency group state to "MVEG 2: in-progress" if not already set to that value;

NOTE 3: This is the case of the MCVideo client receiving notification of an additional MCVideo user in an MCVideo emergency state (i.e., not the MCVideo user that originally triggered the in-progress emergency state of the group) joining the in-progress emergency group call. An emergency alert indication, if included, is handled in step 1).

- 4) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false":
 - a) should display to the MCVideo user an indication of the cancellation of the in-progress emergency state of the MCVideo group call including the following if not already displayed as part of step 2):
 - i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - b) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and
 - c) shall set the MCVideo emergency group call state to "MVEGC 1: emergency-gc-capable";

NOTE 4: This is the case of the MCVideo client receiving the notification of the cancellation of the in-progress emergency state of the MCVideo group. In this case, the receiving MCVideo client is affiliated with the MCVideo group but not participating in the session. An emergency alert cancellation, if included, is handled in step 2).

5) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true":

- a) should display to the MCVideo user an indication of the MCVideo user participating in the MCVideo imminent peril group call including the following if not already displayed as part of step 1):
 - i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- b) shall set the MCVideo imminent peril group state to "MVIIG 2: in-progress" if not already set to that value;

NOTE 5: This is the case of the MCVideo client receiving notification of an additional MCVideo user initiating an imminent peril group call when there is already an in-progress imminent peril state in effect on the group.

6) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false":

- a) should display to the MCVideo user an indication of the cancellation of the in-progress imminent peril state of the MCVideo group including the following if not already displayed as part of step 2):
 - i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
- b) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
- c) shall set the MCVideo imminent peril group call state to "MVIIGC 1: imminent-peril-gc-capable";

NOTE 6: This is the case of the MCVideo client receiving notification of the cancellation of the in-progress imminent peril state of the group.

7) shall generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11]; and

8) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11].

6.3.2.3 Test description

6.3.2.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.3.2.3.2 Test procedure sequence

Table 6.3.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 to receive an emergency alert?	-	-	1	P
-	EXCEPTION: Step 1Aa1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE displays an indication and associated information incase of an emergency alert.	-	-	-	-
1Aa1	IF pc_MCX_DisplayInfoEmergencyAlert THEN Check: Does the UE (MCVideo client) notify the user of the emergency alert? (NOTE 1)	-	-	1	P
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 to receive an emergency alert cancellation?	-	-	1	P
-	EXCEPTION: Step 3a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE displays an indication and associated information incase of an emergency alert.	-	-	-	-
3a1	Check: Does the UE (MCVideo client) notify the user of the emergency alert cancellation? (NOTE 1)	-	-	2	P

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

6.3.2.3.3 Specific message contents

Table 6.3.2.3.3-1: SIP MESSAGE from the SS (step 1, Table 6.3.2.3.2-1; step 2, TS 37.579-1 [2] Table 5.3.33.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1, condition LOCATION-INFO, ACCEPT-CONTACT-WITH-MEDIA-FEATURE-TAG				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.3.2.3.3-2			
MIME body part		Location-info		
MIME-part-body	Location-info as described in Table 6.3.2.3.3-2A			

Table 6.3.2.3.3-2: MCVideo-Info in SIP MESSAGE (Table 6.3.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-group-id	Encrypted <mcvideo-calling-group-id> with mcvideoURI set to px_MCVideo_Group_A_ID	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
alert-ind	Encrypted <alert-ind> with mcvideoBoolean set to true	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
mc-org	px_MCX_DomainName_Organization_A	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		

Table 6.3.2.3.3-2A: Location-Info in SIP MESSAGE (Table 6.3.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.4-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Report				
CurrentLocation				
CurrentCoordinate				
longitude	px_MCX_CoordinateLongitude_Client_B (NOTE 1, 2)			
latitude	px_MCX_CoordinateLatitude_Client_B (NOTE 1, 3)			
NOTE 1: Shall be encrypted as described in TS 37.579-1[2] Table 5.5.3.4.4-2A.				
NOTE 2: Longitude of px_MCX_CoordinateLongitude_Client_B degrees encoded according to TS 23.032 [36] clause 6.1.				
NOTE 3: Latitude of px_MCX_CoordinateLatitude_Client_B degrees encoded according to TS 23.032 [36] clause 6.1.				

Table 6.3.2.3.3-3: SIP MESSAGE from the SS (step 2, Table 6.3.2.3.2-1; step 2, TS 37.579-1 [2] Table 5.3.33.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1, condition ACCEPT-CONTACT-WITH-MEDIA-FEATURE-TAG				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.3.2.3.3-4			

Table 6.3.2.3.3-4: MCVideo-Info in SIP MESSAGE (Table 6.3.2.3.3-3)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-group-id	Encrypted <mcvideo-calling-group-id> with mcvideoURI set to px_MCVideo_Group_A_ID	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		
alert-ind	Encrypted <alert-ind> with mcvideoBoolean set to false	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.2.2-2		

6.4 Video Pull

6.4.1 On-network / Video pull call / One-to-one video pull call / Client Originated (CO)

6.4.1.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo Video Pull call to pull a video
from another MCVideo client }
  then { the UE (MCVideo Client) requests a video pull call by sending a SIP INVITE message and,
responds to a SIP 200 (OK) message with a SIP ACK message }
}
```

(2)

```
with { the UE (MCVideo Client) having established a MCVideo Video Pull call }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User }
  then { the UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo
Server) (Transmission Granted, Transmission Control ACK, Transmission Revoked, Transmission end
request, Transmission end response, Media transmission notification, Receive Media Request, Receive
media response, Media reception end request, Media reception end response, Transmission Idle) and
provides appropriate notifications and information to the MCVideo User }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing MCVideo Video Pull call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Video Pull call }
  then { the UE (MCVideo Client) sends a SIP BYE message, and leaves the MCVideo Session }
}
```

6.4.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in TS 24.281, clauses 12.2.2.1, 12.2.2.3; and TS 24.581, clauses 6.2.5.3.2, 6.2.5.3.3, 6.2.5.4.5, 6.2.5.5.5. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 12.2.2.1]

In order to pull a video from another MCVideo client, the MCVideo client shall perform the procedures of the clause 10.2.2.2.1, with the following clarifications:

- 1) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "one-to-one video pull".

[TS 24.281, clause 12.2.2.3]

When the MCVideo client is in an ongoing one-to-one video pull call, upon an indication from MCVideo user to release the call, the MCVideo client shall perform the procedures of the clause 10.2.4.1.

[TS 24.581, clause 6.2.5.3.2]

Upon receiving the media transmission notification from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
3. shall store the User ID and the SSRC of the user transmitting the media;
4. if the Reception Mode field is set to '0' indicating automatic reception mode:
 - a. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
 - b. shall map the stored User ID and the SSRC of the user transmitting the media with the instance of 'Transmission participant state transition diagram for basic reception control operation' created in step a); and
 - c. shall enter the 'U: has permission to receive' state;
5. may display the details of the incoming media to the user; and
6. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

Upon receiving an indication from the user to request permission to receive media, the transmission participant:

1. shall send the Receive Media Request message toward the transmission control server; The Receive Media Request message:
 - a. if a different priority than the normal priority is required, shall include the Reception Priority field with the priority not higher than negotiated with the transmission control server as specified in subclause 14.3.3; and
 - b. if the receive media request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
3. shall map the stored User ID and the SSRC of the user transmitting the media with instance of 'Transmission participant state transition diagram for basic reception control operation' created in step 2; and
4. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.4.5]

Upon receiving a granted response for Receive media request message, the transmission participant:

1. if the first bit in the subtype of the Receive media response message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '7' (Receive media response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide receive media success notification to the user;
3. if the Receive Media Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T103 (Receive Media Request); and
5. shall enter the 'U: has permission to receive' state.

[TS 24.581, clause 6.2.5.5.5]

Upon receiving a Media reception end request message, the transmission participant:

1. if the first bit in the subtype of the Media reception end request message set to "1" (Acknowledgment is required) as described in subclause 8.3.2, shall send a Reception control Ack message. The Reception control Ack message:
 - a. shall include the Message Type field set to '2' (Media reception end request);
 - b. shall include the Source field set to '0' (the transmission participant is the source); and
 - c. shall include the Message Name field set to MCV2.
2. shall inform the user that the receiving RTP media is being ended;
3. may give information to the user about the reason for ending the received RTP media;
4. shall request the MCVideo client to discard any remaining buffered RTP media packets and stop displaying to user;
5. shall send a Media reception end response message towards the transmission control server;
6. may provide a Media reception end notification to the MCVideo user;
7. if the Receive Media Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call; and
8. shall enter the 'terminated' state.

6.4.1.3 Test description

6.4.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.4.1.3.2 Test procedure sequence

Table 6.4.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a video pull call to pull a video from another MCVideo client. (NOTE 1)	-	-	-	-
2-6	Check: Does the UE (MCVideo client) correctly perform steps 1a1-5 of procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to pull a video from another MCVideo client without implicit transmission request according to option a of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
7	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2	P
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Reception End Request CT' as described in TS 37.579-1 [2] Table 5.3B.10.3-1?	-	-	2	P
9	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P
NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.					

6.4.1.3.3 Specific message contents

Table 6.4.1.3.3-1: SIP INVITE from the UE (Step 3, Table 6.4.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.4.1.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.4.1.3.3-3			

Table 6.4.1.3.3-2: SDP in SIP INVITE (Table 6.4.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, SDP_OFFER
--

Table 6.4.1.3.3-3: MCVideo-Info in SIP INVITE (Table 6.4.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition PRIVATE-CALL, INVITE_REFER				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"one-to-one video pull"		TS 24.281 [26] clause 12.2.2.1	

Table 6.4.1.3.3-4: Void

Table 6.4.1.3.3-5: SIP 200 (OK) from the SS (Step 5, Table 6.4.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP message	As described in Table 6.4.1.3.3-6			

Table 6.4.1.3.3-6: SDP in SIP 200 (OK) (Table 6.4.1.3.3-5)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER				
---	--	--	--	--

Table 6.4.1.3.3-7: Void

6.4.2 On-network / Video pull call / One-to-one video pull call / Client Terminated (CT)

6.4.2.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE from the SS (MCVideo Server) to initiate an
One-to-one video pull call }
  then { the UE (MCVideo Client) responds by sending a SIP 200 (OK) }
}
```

(2)

```
with { the UE (MCVideo Client) having established a MCVideo Video Pull call }
ensure that {
  when { the MCVideo User engages in communication with the initiating MCVideo User }
  then { the UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo
Server) (Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission End
Response, Transmission Idle) and provides appropriate notifications and information to the MCVideo
User }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing MCVideo Video Pull call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Video Pull call }
  then { the UE (MCVideo Client) sends a SIP BYE message, and leaves the MCVideo Session }
}
```


6.4.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in TS 24.281, clauses 12.2.2.2, 12.2.2.3; and TS 24.581, clauses 6.2.4.2.3, 6.2.4.4.6, 6.2.4.5.3, 6.2.4.6.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-16 requirements.

[TS 24.281, clause 12.2.2.2]

Upon receipt of an initial SIP INVITE request for the one-to-one video pull call, the MCVideo client shall perform the procedures of the clause 10.2.2.2.2, with the following clarifications:

- 1) shall initiate the implicit transmit media request as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 12.2.2.3]

When the MCVideo client is in an ongoing one-to-one video pull call, upon an indication from MCVideo user to release the call, the MCVideo client shall perform the procedures of the clause 10.2.4.1.

[TS 24.581, clause 6.2.4.2.3]

When an MCVideo call is established, the terminating transmission participant:

1. shall create an instance of a 'Transmission participant state transition diagram for basic transmission control operation'; and
2. shall enter the 'U: has no permission to transmit' state.

NOTE: From a transmission participant perspective the MCVideo call is established when the application and signalling plane sends the SIP 200 (OK) response.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

6.4.2.3 Test description

6.4.2.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.4.2.3.2 Test procedure sequence

Table 6.4.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish one-to-one video pull call with automatic commencement mode?	-	-	1	P
2-4	Check: Does the UE (MCVideo client) correctly perform steps 2-4 of procedure 'MCVideo Transmission request – Transmission Granted' as described in TS 37.579-1 [2] Table 5.3B.2.3-1 to pull a video from another MCVideo client? (NOTE 2)	-	-	2	P
5	Make the UE (MCVideo client) request end of	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	transmission. (NOTE 1)				
6	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	2	P
7	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P
NOTE 1: This action is expected to be done via a suitable implementation-dependent MMI. NOTE 2: It is assumed that the client considers the establishment of the video pull call as implicit transmission request, i.e. that it automatically enters the 'U: pending request to transmit' state (TS 24.581 [27] clause 6.2.4.4). Editor's note: It is not clear in TS 24.581 what exactly is meant with "implicit transmit media request" in context of CT call establishment (as stated in TS 24.281) and how it shall be handled.					

6.4.2.3.3 Specific message contents

Table 6.4.2.3.3-1: SIP INVITE from the SS (Step 1, Table 6.4.2.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.4.2.3.3-2			
MIME body part		MCVideo Info		
MIME-part-body	MCVideo-Info as described in Table 6.4.2.3.3-3			

Table 6.4.2.3.3-2: SDP in SIP INVITE (Table 6.4.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition INITIAL_SDP_OFFER, PRIVATE-CALL
--

Table 6.4.2.3.3-3: MCVideo-Info in SIP INVITE (Table 6.4.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"one-to-one video pull"		TS 24.281 [26] clause 12.2.2.1	

Table 6.4.2.3.3-4: SIP 200 (OK) from the UE (Step 5, Table 6.4.2.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP message	SDP message as described in Table 6.4.2.3.3-5			

Table 6.4.2.3.3-5: SDP in SIP 200 (OK) (Table 6.4.2.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.4.2.3.3-6: SIP BYE from the UE (Step 8, Table 6.4.2.3.2-1; Step 1, TS 37.579-1 [2] Table 5.3.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.2-1, condition MT_CALL
--

6.5 Video Push

6.5.1 On-network / Video push call / One-to-one video push call / Client Originated (CO)

6.5.1.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo video push call to push a video
to another MCVideo client }
  then { the UE (MCVideo Client) requests a video push call by sending a SIP INVITE message and,
responds to a SIP 200 (OK) message with a SIP ACK message }
}
```

(2)

```
with { the UE (MCVideo Client) having established a MCVideo Video push call }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User }
  then { the UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo
Server) (Transmission Granted, Transmission End Request, Transmission End Response) and provides
transmission granted notification to the MCVideo User }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing MCVideo video push call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo video push call }
  then { the UE (MCVideo Client) sends a SIP BYE message, and leaves the MCVideo Session }
}
```

6.5.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in TS 24.281, clauses 13.2.2.1, 13.2.2.3; and TS 24.581, clauses 6.2.4.2.2, 6.2.4.4.6, 6.2.4.5.3, 6.2.4.6.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 13.2.2.1]

In order to push a video to another MCVideo client, the MCVideo client shall perform the procedures of clause 10.2.2.2.1, with the following clarifications:

- 1) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "one-to-one video push"; and
- 2) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.2.

[TS 24.281, clause 13.2.2.3]

When the MCVideo client is in an ongoing one-to-one video push call, upon an indication from MCVideo user to release the call, the MCVideo client shall perform the procedures of clause 10.2.4.1.

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the 'Transmission participant state transition diagram for basic transmission control operation';
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or rejoining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is rejoining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and

5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

6.5.1.3 Test description

6.5.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.
- UE (MCVideo client) has a pre-recorded video that is available to push to another client.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.5.1.3.2 Test procedure sequence

Table 6.5.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a video push call to push a video to another MCVideo client. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to push a video to another MCVideo client with implicit transmission control according to option b.i of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	2	P
4	Make the UE (MCVideo client) request end of transmission. (NOTE1)	-	-	-	-
5	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	2	P
6	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
7	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P

NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.

6.5.1.3.3 Specific message contents

Table 6.5.1.3.3-1: SIP INVITE from the UE (Step 2, Table 6.5.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.5.1.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.5.1.3.3-3			

Table 6.5.1.3.3-2: SDP in SIP INVITE (Table 6.5.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.5.1.3.3-3: MCVideo-Info in SIP INVITE (Table 6.5.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition PRIVATE-CALL, INVITE_REFER				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"one-to-one video push"		TS 24.281 [26] clause 13.2.2.1	

Table 6.5.1.3.3-4: Void**Table 6.5.1.3.3-5: SIP 200 (OK) from the SS (Step 2, Table 6.5.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP message	As described in Table 6.5.1.3.3-6			

Table 6.5.1.3.3-6: SDP in SIP 200 (OK) (Table 6.5.1.3.3-5)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED, IMPLICIT_FLOOR_GRANTED				
---	--	--	--	--

Table 6.5.1.3.3-7: Void

6.5.2 On-network / Video push call / One-to-server video push call / Client Originated (CO)

6.5.2.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo video push call to push a video to the MCVideo server }
  then { the UE (MCVideo Client) requests a video push call by sending a SIP INVITE message and, responds to a SIP 200 (OK) message with a SIP ACK message and, responds to a SIP INO message with a SIP 200 (OK) message }
}
```

(2)

```
with { the UE (MCVideo Client) having established a MCVideo Video push call }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User }
  then { the UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo Server) (Transmission Granted, Transmission End Request, Transmission End Response) and provides transmission granted notification to the MCVideo User }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing MCVideo video push call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo video push call }
  then { the UE (MCVideo Client) sends a SIP BYE message, and leaves the MCVideo Session }
}
```


6.5.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in TS 24.281, clauses 13.2.2.4, 13.2.2.3; and TS 24.581, clauses 6.2.4.2.2, 6.2.4.4.6, 6.2.4.5.3, 6.2.4.6.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-16 requirements.

[TS 24.281, clause 13.2.2.4]

In order to push a video to a MCVideo server, the MCVideo client shall perform the procedures of clause 10.2.2.2.1, with the following clarifications:

- 1) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "one-to-server video push";
- 2) shall not insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user; and
- 3) shall use the automatic commencement mode.

Upon receiving a SIP INFO request within the dialog of the SIP request for a one-to-server video push call:

- 1) with the Info-Package header field containing the g.3gpp.mcvideo-info package name;
- 2) with the application/vnd.3gpp.mcvideo-info+xml MIME body associated with the info package according to IETF RFC 6086 [54]; and
- 3) with one <video-push-url> element set in the application/vnd.3gpp.mcvideo-info+xml MIME body.

The MCVideo client shall store the received <video-push-url> element.

[TS 24.281, clause 13.2.2.5]

When the MCVideo client is in an ongoing one-to-server video push call, upon an indication from MCVideo user to release the call, the MCVideo client shall perform the procedures of clause 10.2.4.1.

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the 'Transmission participant state transition diagram for basic transmission control operation';
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or rejoining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is rejoining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

6.5.2.3 Test description

6.5.2.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.
- UE (MCVideo client) has a pre-recorded video that is available to push to the MCVideo server.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.5.2.3.2 Test procedure sequence

Table 6.5.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a video push call to push a video to the SS (MCVideo server). (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to push a video to another MCVideo client with implicit transmission control according to option b.i of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	2	P
4	The SS (MCVideo server) sends a SIP INFO message that contains a video-push-url element.	<--	SIP INFO	-	-
5	Check: Does the UE (MCVideo client) respond with a SIP 200 (OK) message?	-->	SIP 200 (OK)	1	P
6	Make the UE (MCVideo client) request end of transmission. (NOTE1)	-	-	-	-
7	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	2	P
8	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
9	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P

NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.

6.5.2.3.3 Specific message contents

Table 6.5.2.3.3-1: SIP INVITE from the UE (Step 2, Table 6.5.2.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.5.2.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.5.2.3.3-3			
MIME body part	not present	Resource list	TS 24.281 [26] clause 13.2.2.4	

Table 6.5.2.3.3-2: SDP in SIP INVITE (Table 6.5.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, SDP_OFFER, IMPLICIT_GRANT_REQUESTED				
--	--	--	--	--

Table 6.5.2.3.3-3: MCVideo-Info in SIP INVITE (Table 6.5.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition PRIVATE-CALL, INVITE_REFER				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"one-to-server video push"		TS 24.281 [26] clause 13.2.2.4	
mcvideo-request-uri	not present			

Table 6.5.2.3.3-4: SIP 200 (OK) from the SS (Step 2, Table 6.5.2.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
SDP message	As described in Table 6.5.2.3.3-5			

Table 6.5.2.3.3-5: SDP in SIP 200 (OK) (Table 6.5.2.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED, IMPLICIT_FLOOR_GRANTED				
---	--	--	--	--

Table 6.5.2.3.3-7: SIP INFO from the SS (Step 4, Table 6.5.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.5.2.3.3-8			

Table 6.5.2.3.3-8: MCVideo-Info in SIP INFO (Table 6.5.2.3.3-7)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	not present			
mcvideo-calling-user-id	not present			
anyExt				
video-push-url	tsc_MCVideo_VSF_URI & "/file-location-1"	set to the URL of the video file located in the MCVideo server	TS 24.281 [26] clause 13.2.3.2.3	

6.6 Capability information sharing

This feature is not specified in the present version of the document.

6.7 Ambient viewing call

6.7.1 On-network / On-demand ambient viewing call / Remote initiated ambient viewing call / Client Originated (CO)

6.7.1.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to initiate a MCVideo remote initiated ambient viewing call }
ensure that {
  when { the MCVideo User requests the establishment of a MCVideo remote initiated ambient viewing call }
  then { UE (MCVideo Client) sends a SIP INVITE message requesting MCVideo remote initiated ambient viewing call and responds to a SIP 200 (OK) message with a SIP ACK message and notifies the MCVideo User that the call has been successfully established }
}
```

(2)

```
with { UE (MCVideo Client) having established a MCVideo remote initiated ambient viewing call }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User }
  then { UE (MCVideo Client) respects the Transmission Control imposed by the MCVideo Server }
}
```

(3)

```
with { UE (MCVideo Client) having an ongoing MCVideo remote initiated ambient viewing call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo remote initiated ambient viewing call }
  then { UE (MCVideo Client) sends a SIP BYE request and after receiving a SIP 200 (OK) and leaves the MCVideo session }
}
```

6.7.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 15.2.1.1, 15.2.1.3, and in TS 24.581, clauses 6.2.5.2.3, 6.2.5.3.2, 6.2.5.3.3, 6.2.5.4.5. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 15.2.1.1]

Upon receiving a request from the MCVideo user to originate a remote initiated ambient viewing call, if the <allow-request-remote-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from the MCVideo user to originate a locally initiated ambient viewing call, if the <allow-request-locally-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from an MCVideo user to establish an MCVideo ambient viewing call that has been authorised successfully by the requesting MCVideo client, the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of identifying the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "ambient-viewing";
- 8) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <ambient-viewing-type> element set to a value of:
 - a) "local-init", if the MCVideo user has requested a locally initiated ambient viewing call;
 - b) "remote-init", if the MCVideo user has requested a remotely initiated ambient viewing call;
- 9) shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the targeted MCVideo user, according to rules and procedures of IETF RFC 5366 [37];

NOTE 1: the targeted MCVideo user is the viewed-to MCVideo user in the case of a remotely initiated ambient viewing call or the viewing MCVideo user in the case of a locally initiated viewing call.

10) if an end-to-end security context needs to be established then:

- a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
- b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
- c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];

- d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8];
 - f) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - g) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8];
- 11) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in clause 6.7.1;
- 12) if this is a locally initiated ambient viewing call, shall comply with the conditions for implicit transmit media request control as specified in clause 6.4;
- 13) if this is a remotely initiated ambient viewing call, shall comply with the conditions for an implicit transmit media request control to the terminating MCVideo client as specified in clause 6.4;
- 14) shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
- 15) shall send the SIP INVITE request towards the participating MCVideo function according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) if the SIP 183(Session Progress) response includes an alert-info header field as specified in IETF RFC 3261 [15] and as updated by IETF RFC 7462 [66] set to a value of "<C:\dev\nullfile:///dev/null>" shall not give any indication of the progress of the call setup to the MCVideo user; and

NOTE 2: The alert-info header field having the value of "<C:\dev\nullfile:///dev/null>" is intended to result in having a "null" alert, i.e. an alert with no content or physical manifestation of any kind.

- 2) if this is a remotely initiated ambient viewing call, may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if this is a remotely initiated ambient viewing call, shall notify the user that the call has been successfully established;
- 3) if this is a locally initiated ambient viewing call, shall not provide any indication to the user that the call has been successfully established;
- 4) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the sent SIP INVITE request was set to a value of "local-init":
 - a) shall cache the value of "viewed-to MCVideo user" as the ambient viewing client role for this call; or
 - b) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body was set to a value of "remote-init" shall cache the value of "viewing MCVideo user" as the ambient viewing client role for this call; and
- 5) shall cache the value contained in the <ambient-viewing-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set in step 8) as the ambient viewing type of this call.

[TS 24.281, clause 15.2.1.3]

Upon receiving a request from an MCVideo user to release an MCVideo ambient viewing call:

The MCVideo client:

- 1) if the MCVideo client has not received a `g.3gpp.mcvideo.ambient-viewing-call-release` feature-capability indicator as described in clause D.3 in the Feature-Caps header field according to IETF RFC 6809 [63] in;
 - a) a received SIP INVITE request for the ambient viewing call; or
 - b) a received SIP 200 (OK) response to a sent SIP INVITE request for the ambient viewing call;then shall skip the rest of the steps;
- 2) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 3) shall generate a SIP BYE request according to rules and procedures of 3GPP TS 24.229 [11] and IETF RFC 6086 [21]; and
- 4) shall send the SIP BYE request within the dialog of the MCVideo ambient call session as specified in 3GPP TS 24.229 [11].

Upon receipt of the SIP 200 (OK) response to the SIP BYE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the cached ambient viewing client role is equal to "viewed-to MCVideo user", shall provide no indication that an ambient viewing call has been terminated;
- 3) if the cached ambient viewing client role is equal to "viewing MCVideo user", may provide an indication to the MCVideo user that the ambient viewing call has been terminated; and
- 4) shall clear the cache of the data stored as:
 - a) ambient viewing client role; and
 - b) ambient viewing type.

[TS 24.581, clause 6.2.5.2.3]

When an MCVideo call is established, the originating transmission participant:

1. shall create an instance of a 'Transmission participant state transition diagram for general reception control operation'; and
2. shall enter the 'U: reception controller' state.

NOTE: From a transmission participant perspective the MCVideo call is established when the application and signalling plane receives the SIP 200 (OK) response.

[TS 24.581, clause 6.2.5.3.2]

Upon receiving the media transmission notification from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
3. shall store the User ID and the SSRC of the user transmitting the media;
4. if the Reception Mode field is set to '0' indicating automatic reception mode:
 - a. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
 - b. shall map the stored User ID and the SSRC of the user transmitting the media with the instance of 'Transmission participant state transition diagram for basic reception control operation' created in step a); and

- c. shall enter the 'U: has permission to receive' state;
- 5. may display the details of the incoming media to the user; and
- 6. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

Upon receiving an indication from the user to request permission to receive media, the transmission participant:

1. shall send the Receive Media Request message toward the transmission control server; The Receive Media Request message:
 - a. if a different priority than the normal priority is required, shall include the Reception Priority field with the priority not higher than negotiated with the transmission control server as specified in subclause 14.3.3; and
 - b. if the receive media request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
3. shall map the stored User ID and the SSRC of the user transmitting the media with instance of 'Transmission participant state transition diagram for basic reception control operation' created in step 2; and
4. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.4.5]

Upon receiving a granted response for Receive media request message, the transmission participant:

1. if the first bit in the subtype of the Receive media response message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '7' (Receive media response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide receive media success notification to the user;
3. if the Receive Media Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T103 (Receive Media Request); and
5. shall enter the 'U: has permission to receive' state.

6.7.1.3 Test description

6.7.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2 with the following clarifications:
 - The <allow-request-remote-initiated-ambient-viewing> element of the <ruleset> element is present in the MCVideo user profile document and is set to "true" ⇒ The MCVideo User is authorized to initiate a remotely initiated ambient viewing call.
NOTE: This is the default according to TS 37.579-1 [2] Table 5.5.8.7-1.

- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.7.1.3.2 Test procedure sequence

Table 6.7.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a remotely initiated ambient viewing call to user B. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform the procedure 'MCVideo CO establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a group call with automatic commencement mode and without implicit transmission control according to option a of NOTE 1 in TS 37.579.1 [2] Table 5.3A.1.3-1?	-	-	1	P
3-6	Void	-	-	-	-
7	Check: Does the UE (MCVideo client) notify the user that the call has been established? (NOTE 1)	-	-	1	P
8	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?	-	-	2	P
9	Check: Does the UE (MCVideo client) provide receive media success notification to the user? (NOTE 1)	-	-	2	P
10	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
11	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	3	P
NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.					

6.7.1.3.3 Specific message contents

Table 6.7.1.3.3-1: SIP INVITE from the UE (Step 2, Table 6.7.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Priv-Answer-Mode				
answer-mode-value	"Auto"			
answer-mode-param	"require"			
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Table 6.7.1.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-3			

Table 6.7.1.3.3-2: SDP Message in SIP INVITE (Table 6.7.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED				
Information Element	Value/remark	Comment	Reference	Condition
Media description[2]				
media attribute		a=line attribute=recvonly		
recvonly				

Table 6.7.1.3.3-3: MCVideo-Info in SIP INVITE (Table 6.7.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"ambient-viewing"			
anyExt				
ambient-viewing-type	"remote-init"			

Table 6.7.1.3.3-4: Void**Table 6.7.1.3.3-5: SIP 200 (OK) from the SS (Step 5, Table 6.7.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Feature-Caps				
fc-value	"+g.3gpp.mcvideo.ambient-viewing-call-release"		TS 24.281 [26] clause 15.4.2	
Message-body				
SDP Message	As described in Table 6.7.1.3.3-6			

Table 6.7.1.3.3-6: SDP Message in SIP 200 (OK) (Table 6.7.1.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER				
---	--	--	--	--

Table 6.7.1.3.3-7..8: Void

6.7.2 On-network / On-demand ambient viewing call / Remote initiated ambient viewing call / Client Terminated (CT)

6.7.2.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE message to establish a MCVideo remote
initiated ambient viewing call }
    then { UE (MCVideo Client) sends a SIP 200 (OK) message }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing MCVideo remote initiated ambient viewing call }
ensure that {
  when { UE (MCVideo Client) engages in communication with the calling MCVideo client }
    then { UE (MCVideo Client) respects the Transmission Control imposed by the MCVideo Server }
}
```

(3)

```
with { UE (MCVideo Client) having an ongoing MCVideo remote initiated ambient viewing call }
ensure that {
  when { UE (MCVideo Client) receives a SIP BYE message to terminate the ongoing MCVideo remote
initiated ambient viewing call }
    then { UE (MCVideo Client) sends a SIP 200 (OK) message and leaves the MCVideo session }
}
```

6.7.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 15.2.1.2, 15.2.1.4, and in TS 24.581, clauses 6.2.4.2.3, 6.2.4.4.6, 6.2.4.5.7. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 15.2.1.2]

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if either of the conditions in step a) or b) are met:
 - a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25]; or
 - b) MCVideo client does not have enough resources to handle the call;
 - c) if neither condition a) nor b) are met, continue with the rest of the steps;
- 2) if the SIP INVITE request is rejected in step 1):
 - a) shall respond towards the participating MCVideo function either with:
 - i) an appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in clause 4.4.2; or

- ii) with a SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25]; and
 - b) skip the rest of the steps of this clause;
- 3) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
- a) shall extract the MCVideo ID of the originating MCVideo from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [6], and include warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4; and
 - e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 1: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

- 4) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 5) if the received SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <ambient-viewing-type> element set to a value of "local-init", may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 6) shall perform the automatic commencement procedures specified in clause 6.2.3.1.1;

NOTE 2: Auto-answer is the commencement mode for both participants in locally initiated and remotely initiated ambient viewing calls.

- 7) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request was set to a value of "remote-init":
 - a) shall cache the value of "viewed-to MCVideo user" as the ambient viewing client role for this call; or;
 - b) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body was set to a value of "local-init" shall cache the value of "viewing MCVideo user" as the ambient viewing client role for this call;
- 8) if the received SIP INVITE request includes an alert-info header field as specified in IETF RFC 3261 [15] and as updated by IETF RFC 7462 [66] set to a value of "<file:///dev/null>" shall not give any indication of the progress of the call to the MCVideo user;

NOTE 3: The alert-info header field having the value of "<file:///dev/null>" is intended to result in having a "null" alert, i.e. an alert with no content or physical manifestation of any kind.

- 9) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body is set to a value of "local-init", should provide an indication to the MCVideo user that the ambient viewing call is in progress; and

NOTE 4: The terminating user in a remotely initiated ambient viewing is the viewed-to MCVideo user and is intended to be totally unaware that their camera is activated and a call is in progress.

10) shall cache as the ambient viewing type for the call the value contained in the <ambient-viewing-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body contained in the received SIP INVITE request.

[TS 24.281, clause 15.2.1.4]

This clause is referenced from other procedures.

Upon receipt of a SIP BYE request in the dialog of an ambient viewing session, the MCVideo client:

- 1) shall comply with the procedures of clause 6.2.6;
- 2) if the cached ambient viewing client role is equal to "viewed-to MCVideo user", shall provide no indication that an ambient viewing call has been terminated;
- 3) if the cached ambient viewing client role is equal to "viewing MCVideo user", may provide an indication to the MCVideo user that the ambient viewing call has been terminated; and
- 4) shall clear the cache of the data stored as:
 - a) ambient viewing client role; and
 - b) ambient viewing type.

[TS 24.581, clause 6.2.4.2.3]

When an MCVideo call is established, the terminating transmission participant:

1. shall create an instance of a 'Transmission participant state transition diagram for basic transmission control operation'; and
2. shall enter the 'U: has no permission to transmit' state.

NOTE: From a transmission participant perspective the MCVideo call is established when the application and signalling plane sends the SIP 200 (OK) response.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.7]

Upon receiving a Transmission End Request message from transmission control server, the transmission participant:

1. shall inform the user that the permission to send RTP media is being revoked;
2. may give information to the user about the reason for terminating the permission to send media;

3. shall request the media in the MCVideo client to discard any remaining buffered RTP media packets and to stop forwarding of encoded video to the MCVideo server; and
4. shall send Transmission End Response message to the transmission control server.
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

6.7.2.3 Test description

6.7.2.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.7.2.3.2 Test procedure sequence

Table 6.7.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish a remote initiated ambient viewing call?	-	-	1	-
2	The SS (MCVideo server) sends a Transmission Granted message.	<--	Transmission Granted	-	-
3	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	2	F
4	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Transmission End Request CT' as described in TS 37.579-1 [2] Table 5.3B.9.3-1?	-	-	2	P
5	Check: Does the UE (MCVideo client) notify the user that the permission to send RTP media is being revoked? (NOTE 1)	-	-	2	F
6	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT call release' as described in TS 37.579-1 [2] Table 5.3.12.3-1?	-	-	3	P

NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.

6.7.2.3.3 Specific message contents

Table 6.7.2.3.3-1: SIP INVITE from the SS (Step 1, Table 6.7.2.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Answer-Mode	not present			
Priv-Answer-Mode				
answer-mode-value	"Auto"			
answer-mode-param	"require"			
Alert-Info				
value	"<file:///dev/null>"			
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Table 6.7.2.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.7.2.3.3-3			

Table 6.7.2.3.3-2: SDP in SIP INVITE (Table 6.7.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition PRIVATE-CALL, INITIAL_SDP_OFFER				
Information Element	Value/remark	Comment	Reference	Condition
Media description[2]		Media description for video		
media attribute		a=line attribute=recvonly		
recvonly				

Table 6.7.2.3.3-3: MCVideo-Info in SIP INVITE (Table 6.7.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"ambient-viewing"			
anyExt				
ambient-viewing-type	"remote-init"			

Table 6.7.2.3.3-4: SIP 200 (OK) from the UE (Step 1, Table 6.7.2.3.2-1; Step 4, TS 37.579-1 [2], Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Table 6.7.2.3.3-5			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.7.2.3.3-6			

Table 6.7.2.3.3-5: SDP in SIP 200 (OK) (Table 6.7.2.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER				
---	--	--	--	--

Table 6.7.2.3.3-6: MCVideo-Info in SIP 200 (OK) (Table 6.7.2.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.7.2.3.3-7: Void

6.7.3 On-network / On-demand ambient viewing call / Locally initiated ambient viewing call / Client Originated (CO)

6.7.3.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised
to initiate a MCVideo locally initiated ambient viewing call }
ensure that {
  when { the MCVideo User requests the establishment of a MCVideo locally initiated ambient viewing
call }
  then { UE (MCVideo Client) sends a SIP INVITE message requesting the establishment of an MCVideo
locally initiated ambient viewing call and responds to a SIP 200 (OK) message with a SIP ACK message
and does not notify the MCVideo User that the call has been successfully established }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing MCVideo locally initiated ambient viewing call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo locally initiated ambient
viewing call }
  then { UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session after
receiving a SIP 200 (OK) message and provides no indication that an ambient viewing call has been
terminated }
}
```

6.7.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 15.2.1.1, 15.2.1.3, and in TS 24.581, clauses 6.2.5.2.3, 6.2.5.3.2, 6.2.5.3.3, 6.2.5.4.5. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-16 requirements.

[TS 24.281, clause 15.2.1.1]

Upon receiving a request from the MCVideo user to originate a remote initiated ambient viewing call, if the <allow-request-remote-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from the MCVideo user to originate a locally initiated ambient viewing call, if the <allow-request-locally-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from an MCVideo user to establish an MCVideo ambient viewing call that has been authorised successfully by the requesting MCVideo client, the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of identifying the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "ambient-viewing";
- 8) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <ambient-viewing-type> element set to a value of:
 - a) "local-init", if the MCVideo user has requested a locally initiated ambient viewing call; or
 - b) "remote-init", if the MCVideo user has requested a remotely initiated ambient viewing call;
- 9) shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the targeted MCVideo user, according to rules and procedures of IETF RFC 5366 [37];

NOTE 1: the targeted MCVideo user is the viewed-to MCVideo user in the case of a remotely initiated ambient viewing call or the viewing MCVideo user in the case of a locally initiated viewing call.

10) if an end-to-end security context needs to be established then:

- a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
 - c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8];
 - f) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - g) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8];
- 11) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in clause 6.2.1;
- 12) if this is a locally initiated ambient viewing call, shall comply with the conditions for implicit transmit media request control as specified in clause 6.4;

- 13) if this is a remotely initiated ambient viewing call, shall comply with the conditions for an implicit transmit media request control to the terminating MCVideo client as specified in clause 6.4;
- 14) shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
- 15) shall send the SIP INVITE request towards the participating MCVideo function according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) if the SIP 183(Session Progress) response includes an alert-info header field as specified in IETF RFC 3261 [15] and as updated by IETF RFC 7462 [66] set to a value of "<C:\dev\nullfile:///dev/null>" shall not give any indication of the progress of the call setup to the MCVideo user; and

NOTE 2: The alert-info header field having the value of "<C:\dev\nullfile:///dev/null>" is intended to result in having a "null" alert, i.e. an alert with no content or physical manifestation of any kind.

- 2) if this is a remotely initiated ambient viewing call, may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if this is a remotely initiated ambient viewing call, shall notify the user that the call has been successfully established;
- 3) if this is a locally initiated ambient viewing call, shall not provide any indication to the user that the call has been successfully established;
- 4) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the sent SIP INVITE request was set to a value of "local-init":
 - a) shall cache the value of "viewed-to MCVideo user" as the ambient viewing client role for this call; or
 - b) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body was set to a value of "remote-init" shall cache the value of "viewing MCVideo user" as the ambient viewing client role for this call; and
- 5) shall cache the value contained in the <ambient-viewing-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set in step 8) as the ambient viewing type of this call.

[TS 24.281, clause 15.2.1.3]

Upon receiving a request from an MCVideo user to release an MCVideo ambient viewing call:

The MCVideo client:

- 1) if the MCVideo client has not received a g.3gpp.mcvideo.ambient-viewing-call-release feature-capability indicator as described in clause D.3 in the Feature-Caps header field according to IETF RFC 6809 [63] in:
 - a) a received SIP INVITE request for the ambient viewing call; or
 - b) a received SIP 200 (OK) response to a sent SIP INVITE request for the ambient viewing call;then shall skip the rest of the steps;
- 2) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 3) shall generate a SIP BYE request according to rules and procedures of 3GPP TS 24.229 [11] and IETF RFC 6086 [21]; and
- 4) shall send the SIP BYE request within the dialog of the MCVideo ambient call session as specified in 3GPP TS 24.229 [11].

Upon receipt of the SIP 200 (OK) response to the SIP BYE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the cached ambient viewing client role is equal to "viewed-to MCVideo user", shall provide no indication that an ambient viewing call has been terminated;
- 3) if the cached ambient viewing client role is equal to "viewing MCVideo user", may provide an indication to the MCVideo user that the ambient viewing call has been terminated; and
- 4) shall clear the cache of the data stored as:
 - a) ambient viewing client role; and
 - b) ambient viewing type.

[TS 24.581, clause 6.2.5.2.3]

When an MCVideo call is established, the originating transmission participant:

1. shall create an instance of a 'Transmission participant state transition diagram for general reception control operation'; and
2. shall enter the 'U: reception controller' state.

NOTE: From a transmission participant perspective the MCVideo call is established when the application and signalling plane receives the SIP 200 (OK) response.

[TS 24.581, clause 6.2.5.3.2]

Upon receiving the media transmission notification from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
3. shall store the User ID and the SSRC of the user transmitting the media;
4. if the Reception Mode field is set to '0' indicating automatic reception mode:
 - a. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
 - b. shall map the stored User ID and the SSRC of the user transmitting the media with the instance of 'Transmission participant state transition diagram for basic reception control operation' created in step a); and
 - c. shall enter the 'U: has permission to receive' state;
5. may display the details of the incoming media to the user; and
6. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

Upon receiving an indication from the user to request permission to receive media, the transmission participant:

1. shall send the Receive Media Request message toward the transmission control server; The Receive Media Request message:
 - a. if a different priority than the normal priority is required, shall include the Reception Priority field with the priority not higher than negotiated with the transmission control server as specified in clause 14.3.3; and
 - b. if the receive media request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;

2. shall create an instance of the 'Transmission participant state transition diagram for basic reception control operation';
3. shall map the stored User ID and the SSRC of the user transmitting the media with instance of 'Transmission participant state transition diagram for basic reception control operation' created in step 2; and
4. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.4.5]

Upon receiving a granted response for Receive media request message, the transmission participant:

1. if the first bit in the subtype of the Receive media response message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '7' (Receive media response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide receive media success notification to the user;
3. if the Receive Media Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T103 (Receive Media Request); and
5. shall enter the 'U: has permission to receive' state.

6.7.3.3 Test description

6.7.3.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2 with the following clarifications:
 - The <allow-request-locally-initiated-ambient-viewing> element of the <ruleset> element is present in the MCVideo user profile document and is set to "true" ⇒ The MCVideo User is authorized to initiate a locally initiated ambient viewing call.
NOTE: This is the default according to TS 37.579-1 [2] Table 5.5.8.7-1.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.7.3.3.2 Test procedure sequence

Table 6.7.3.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a locally initiated ambient viewing call to user B. (NOTE 1)	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
2	Check: Does the UE (MCVideo client) correctly perform the procedure 'MCVideo CO establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a locally initiated ambient viewing call with automatic commencement mode and without implicit transmission control according to option b.i of NOTE 1 in TS 37.579.1 [2] Table 5.3A.1.3-1?	-	-	1	P
3	Check: Does the UE (MCVideo client) notify the user that the call has been established? (NOTE 1)	-	-	1	F
4	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
5	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P
6	Check: Does the UE (MCVideo client) notify the user that the call has been terminated? (NOTE 1)	-	-	2	F

NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.

6.7.3.3.3 Specific message contents

Table 6.7.3.3.3-1: SIP INVITE from the UE (Step 2, Table 6.7.3.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL

Information Element	Value/remark	Comment	Reference	Condition
Priv-Answer-Mode				
answer-mode-value	"Auto"			
answer-mode-param	"require"			
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Table 6.7.3.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.7.3.3.3-3			

Table 6.7.3.3.3-2: SDP Message in SIP INVITE (Table 6.7.3.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition PRIVATE-CALL, INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED

Information Element	Value/remark	Comment	Reference	Condition
Media description[2]		Media description for video		
media attribute		a=line attribute=sendonly		
sendonly				

Table 6.7.3.3.3-3: MCVideo-Info in SIP INVITE (Table 6.7.3.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"ambient-viewing"			
anyExt				
ambient-viewing-type	"local-init"			

Table 6.7.3.3.3-4: SIP 200 (OK) from the SS (Step 2, Table 6.7.3.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Feature-Caps				
fc-value	"+g.3gpp.mcvideo.ambient-viewing-call-release"		TS 24.281 [26] clause 15.4.2	
Message-body				
SDP Message	As described in Table 6.7.3.3.3-6			

Table 6.7.3.3.3-5: SDP Message in SIP 200 (OK) (Table 6.7.3.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED, IMPLICIT_FLOOR_GRANTED				
---	--	--	--	--

6.7.4 On-network / On-demand ambient viewing call / Locally initiated ambient viewing call / Client Terminated (CT)

6.7.4.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE message to establish a MCVideo remote
initiated ambient viewing call }
  then { UE (MCVideo Client) sends a SIP 200 (OK) message and respects the Transmission Control
imposed by the MCVideo Server }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing MCVideo locally initiated ambient viewing call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo locally initiated ambient
viewing call }
  then { UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session after
receiving a SIP 200 (OK) message }
}
```

6.7.4.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 15.2.1.2, 15.2.1.3, and in TS 24.581, clauses 6.2.4.2.3, 6.2.4.4.6. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-16 requirements.

[TS 24.281, clause 15.2.1.2]

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

- 1) may reject the SIP INVITE request if either of the conditions in step a) or b) are met:
 - a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25]; or
 - b) MCVideo client does not have enough resources to handle the call;
 - c) if neither condition a) nor b) are met, continue with the rest of the steps;
 - 2) if the SIP INVITE request is rejected in step 1):
 - a) shall respond towards the participating MCVideo function either with:
 - i) an appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in clause 4.4.2; or
 - ii) with a SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25]; and
 - b) skip the rest of the steps of this clause;
 - 3) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [6], and include warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4; and
 - e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];
- NOTE 1: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.
- 4) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
 - 5) if the received SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <ambient-viewing-type> element set to a value of "local-init", may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
 - 6) shall perform the automatic commencement procedures specified in clause 6.2.3.1.1;

NOTE 2: Auto-answer is the commencement mode for both participants in locally initiated and remotely initiated ambient viewing calls.

- 7) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request was set to a value of "remote-init":
 - a) shall cache the value of "viewed-to MCVideo user" as the ambient viewing client role for this call; or;
 - b) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body was set to a value of "local-init" shall cache the value of "viewing MCVideo user" as the ambient viewing client role for this call;
- 8) if the received SIP INVITE request includes an alert-info header field as specified in IETF RFC 3261 [15] and as updated by IETF RFC 7462 [66] set to a value of "<file:///dev/null>" shall not give any indication of the progress of the call to the MCVideo user;

NOTE 3: The alert-info header field having the value of "<file:///dev/null>" is intended to result in having a "null" alert, i.e. an alert with no content or physical manifestation of any kind.

- 9) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body is set to a value of "local-init", should provide an indication to the MCVideo user that the ambient viewing call is in progress; and

NOTE 4: The terminating user in a remotely initiated ambient viewing is the viewed-to MCVideo user and is intended to be totally unaware that their camera is activated and a call is in progress.

- 10) shall cache as the ambient viewing type for the call the value contained in the <ambient-viewing-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body contained in the received SIP INVITE request.

[TS 24.281, clause 15.2.1.3]

Upon receiving a request from an MCVideo user to release an MCVideo ambient viewing call:

The MCVideo client:

- 1) if the MCVideo client has not received a g.3gpp.mcvideo.ambient-viewing-call-release feature-capability indicator as described in clause D.3 in the Feature-Caps header field according to IETF RFC 6809 [63] in:
 - a) a received SIP INVITE request for the ambient viewing call; or
 - b) a received SIP 200 (OK) response to a sent SIP INVITE request for the ambient viewing call;then shall skip the rest of the steps;
- 2) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 3) shall generate a SIP BYE request according to rules and procedures of 3GPP TS 24.229 [11] and IETF RFC 6086 [21]; and
- 4) shall send the SIP BYE request within the dialog of the MCVideo ambient call session as specified in 3GPP TS 24.229 [11].

Upon receipt of the SIP 200 (OK) response to the SIP BYE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the cached ambient viewing client role is equal to "viewed-to MCVideo user", shall provide no indication that an ambient viewing call has been terminated;
- 3) if the cached ambient viewing client role is equal to "viewing MCVideo user", may provide an indication to the MCVideo user that the ambient viewing call has been terminated; and
- 4) shall clear the cache of the data stored as:
 - a) ambient viewing client role; and
 - b) ambient viewing type.

[TS 24.581, clause 6.2.4.2.3]

When an MCVideo call is established, the terminating transmission participant:

1. shall create an instance of a 'Transmission participant state transition diagram for basic transmission control operation'; and
2. shall enter the 'U: has no permission to transmit' state.

NOTE: From a transmission participant perspective the MCVideo call is established when the application and signalling plane sends the SIP 200 (OK) response.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in clause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

6.7.4.3 Test description

6.7.4.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.7.4.3.2 Test procedure sequence

Table 6.7.4.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CT session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3.4.3-1 to establish a remote initiated ambient viewing call?	-	-	1	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo Media Transmission Notification and	-	-	1	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	Request CT' as described in TS 37.579-1 [2] Table 5.3B.3.3-1?				
3	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
4	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	2	P

NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.

6.7.4.3.3 Specific message contents

Table 6.7.4.3.3-1: SIP INVITE from the SS (Step 1, Table 6.7.4.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.2-1, condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Answer-Mode	not present			
Priv-Answer-Mode				
answer-mode-value	"Auto"			
answer-mode-param	"require"			
Feature-Caps				
fc-value	"+g.3gpp.mcvideo.ambient-viewing-call-release"		TS 24.281 [26] clause 15.4.1	
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Table 6.7.4.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.7.4.3.3-3			

Table 6.7.4.3.3-2: SDP in SIP INVITE (Table 6.7.4.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition PRIVATE-CALL, INITIAL_SDP_OFFER				
Information Element	Value/remark	Comment	Reference	Condition
Media description[2]		Media description for video		
media attribute		a=line attribute=sendonly		
sendonly				

Table 6.7.4.3.3-3: MCVideo-Info in SIP INVITE (Table 6.7.4.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"ambient-viewing"			
anyExt				
ambient-viewing-type	"local-init "			

Table 6.7.4.3.3-4: SIP 200 (OK) from the UE (Step 1, Table 6.7.4.3.2-1; Step 4, TS 37.579-1 [2], Table 5.3.4.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Table 6.7.4.3.3-5			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.7.4.3.3-6			

Table 6.7.4.3.3-5: SDP in SIP 200 (OK) (Table 6.7.4.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition SDP_ANSWER

Table 6.7.4.3.3-6: MCVideo-Info in SIP 200 (OK) (Table 6.7.4.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition INVITE-RSP

Table 6.7.4.3.3-7: SIP BYE from the UE (Step 4, Table 6.7.4.3.2-1; Step 1, TS 37.579-1 [2], Table 5.3.10.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.2.1-1, condition MT_CALL
--

6.8 Use of MBMS transmission

6.8.1 On-network / MBMS / MBMS Bearer Announcement / MBMS Bearer Listening Status / Transition to MBMS from Unicast / MBMS Transmission Control / Transition to Unicast from MBMS

6.8.1.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo On-demand Pre-arranged Group Call }
  then { UE (MCVideo Client) requests On-demand Pre-arranged Group Call by sending a SIP INVITE message, and, after indication from the MCVideo Server that the call was established and receiving a Transmission Granted message, notifies the user }
}
```

(2)

```
with { the UE (MCVideo Client) having established a MCVideo On-demand Pre-arranged Group Call with Automatic Commencement Mode }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User(s) }
  then { the UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo Server) }
}
```

(3)

```
with { UE (MCVideo Client) having established an MCVideo On-demand Pre-arranged Group Call }
```

```

ensure that {
  when { the UE (MCVideo Client) receives MBMS bearer announcements via SIP MESSAGE messages }
  then { UE (MCVideo Client) responds by sending a SIP 200 (OK) to the SIP MESSAGE message and the
  UE (MCVideo Client) sends an MBMS listening status message via SIP MESSAGE }
}

```

(4)

```

with { UE (MCVideo Client) having established an MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives MBMS subchannel control messages }
  then { UE (MCVideo Client) responds by sending an MBMS listening status message via SIP MESSAGE }
}

```

(5)

```

with { UE (MCVideo Client) listening to the MBMS subchannel during an ongoing MCVideo On-demand Pre-
arranged Group Call }
ensure that {
  when { the MCVideo User (MCVideo Client) engages in communication with the invited MCVideo User(s) }
  then { UE (MCVideo Client) respects the transmission control imposed by the MCVideo Server on
the MBMS subchannel and continues to respect transmission control imposed by the MCVideo Server via
unicast }
}

```

(6)

```

with { UE (MCVideo Client) no longer listening to the MBMS subchannel during an ongoing MCVideo On-
demand Pre-arranged Group Call }
ensure that {
  when { the MCVideo User (MCVideo Client) engages in communication with the invited MCVideo User(s) }
  then { UE (MCVideo Client) respects transmission control imposed by the MCVideo Server via
unicast }
}

```

(7)

```

with { UE (MCVideo Client) having established an MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives an explicit MuSiK download message }
  then { UE (MCVideo Client) sends a 200 OK response to accept the key and associates the key with
the group}
}

```

(8)

```

with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call
  when { the MCVideo User) requests to end the On-demand Pre-arranged Group Call }
  then { UE (MCVideo Client) sends a SIP BYE message and leaves the call }
}

```

6.8.1.2 Conformance Requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 16.2.2, 16.2.3.2, 16.2.4; and TS 24.581 clauses 6.2.4.2.2, 6.2.4.4.6, 6.2.4.5.3, 6.2.4.6.4, 6.2.4.3.2. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 16.2.2]

The MCVideo client associates each received application/sdp MIME body and each received security key with a general purpose MBMS subchannel announced in the same MBMS Bearer Announcement message. When receiving a MapGroupToBearer message, the MCVideo client interprets its content (e.g. the m= line number) in the context of the application/sdp MIME body associated with the general purpose MBMS subchannel on which the MapGroupToBearer was received.

When the MCVideo client receives a SIP MESSAGE request containing:

- 1) a P-Asserted-Service header field containing the "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and
- 2) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body containing one or more <announcement> element(s);

then the MCVideo client for each <announcement> element in the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:

- 1) if the <mbms-service-areas> element is present:
 - a) if an <announcement> element with the same value of the <TMGI> element is already stored:
 - i) shall replace the old <announcement> element with the <announcement> element received in the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body;
 - b) if there is no <announcement> element with the same value of the <TMGI> element stored:
 - i) shall store the received <announcement> element;
 - c) shall associate the received announcement with the received application/sdp MIME body;
 - d) shall associate the received announcement with the received <GPMS> element;
 - e) shall store the MBMS public service identity of the participating MCVideo function received in the P-Asserted-Identity header field and associate the MBMS public service identity with the new <announcement> element;
 - f) if a "a=key-mgmt" media-level attribute with the "mikey" key management and protocol identifier and a MIKEY-SAKKE I_MESSAGE is included for the general purpose MBMS subchannel defined in the "m=application" media line in the application/sdp MIME body in the received SIP MESSAGE request,
 - i) shall extract the initiator URI from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]. If the initiator URI deviates from the public service identity of the participating MCVideo function serving the MCVideo user, shall reject the SIP MESSAGE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [6], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;
 - ii) shall convert the initiator URI to a UID as described in 3GPP TS 33.180 [8];
 - iii) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - iv) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP MESSAGE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [6], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;
 - v) shall extract and decrypt the encapsulated MSCCK using the participating MCVideo function's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - vi) shall extract the MSCCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE: With the MSCCK successfully shared between the participating MCVideo function and the served UEs, the participating MCVideo function is able to securely send MBMS subchannel control messages to the MCVideo clients.

- g) shall listen to the general purpose MBMS subchannel defined in the "m=application" media line in the application/sdp MIME body in the received SIP MESSAGE request when entering an MBMS service area where the announced MBMS bearer is available; and
 - h) shall check the condition for sending a listening status report as specified in the clause 16.2.3; and
- 2) if no <mbms-service-areas> element is present:

- a) shall discard a previously stored <announcement> element identified by the value of the <TMGI>;
- b) shall remove the association with the stored application/sdp MIME body and stop listening to the general purpose MBMS subchannel;
- c) if no more <announcement> elements associated with the stored application/sdp MIME body are stored in the MCVideo client, shall remove the stored application/sdp MIME body; and
- d) check the condition for sending a listening status report as specified in the clause 16.2.3.

[TS 24.281, clause 16.2.3.2]

When the MCVideo client wants to report the MBMS bearer listening status, the MCVideo client:

NOTE 1: The application/vnd.3gpp.mcvideo-mbms-usage-info+xml can contain both the listening status "listening" and "not listening" at the same time.

- 1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]; and
 - a) shall include in the Request-URI the MBMS public service identity of the participating MCVideo function received in the P-Asserted-Identity header field of the announcement message;
 - b) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media-feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
 - c) should include a public user identity in the P-Preferred-Identity header field as specified in 3GPP TS 24.229 [11];
 - d) shall include a P-Preferred-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
 - e) shall include an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body with the <version> element set to "1";
 - f) if the MCVideo client is listening to the MBMS bearer, the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:
 - i) shall include an <mbms-listening-status> element set to "listening";
 - ii) if the intention is to report that the MCVideo client is listening to the MBMS subchannel for an ongoing transmission in a session (e.g. as the response to the Map Group To Bearer message), shall include the MCVideo session identity of the ongoing transmission in a <session-id> element;
 - iii) shall include one or more <TMGI> elements for which the listening status applies; and
 - iv) if the intention is to report that the MCVideo client is listening to the general purpose MBMS subchannel, shall include the <general-purpose> element set to "true";
 - g) if the MCVideo client is not listening, the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:
 - i) shall include an <mbms-listening-status> element set to "not-listening";
 - iii) shall include one or more <TMGI> elements for which the listening status applies;
 - iii) if the intention is to report that the MCVideo client is no longer listening to the MBMS subchannel in an ongoing session (e.g. as the response to Unmap Group to Bearer message), shall include the MCVideo session identity in a <session-id> element; and
 - iv) if the intention is to report that the MCVideo client is no longer listening to general purpose MBMS subchannel, shall include the <general-purpose> element set to "false"; and

NOTE 2: If the MCVideo client reports that the MCVideo client is no longer listening to the general purpose MBMS subchannel, it is implicitly understood that the MCVideo client no longer listens to any MBMS subchannel in ongoing transmissions that the MCVideo client previously reported status "listening".

h) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-request-uri> set to the MCVideo ID of the user; and

2) shall send the SIP MESSAGE request according to 3GPP TS 24.229 [11].

When the MCVideo client meets all the conditions specified in clause 16.2.3.1 for reporting a change in an MBMS bearer suspension status, the MCVideo client:

1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]; and

a) shall include in the Request-URI the MBMS public service identity of the participating MCVideo function received in the P-Asserted-Identity header field of the announcement message;

b) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media-feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

c) should include a public user identity in the P-Preferred-Identity header field as specified in 3GPP TS 24.229 [11];

d) shall include a P-Preferred-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

e) shall include an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body with the <version> element set to "1";

f) if at least one MBMS bearer is about to be suspended, the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:

i) shall include an <mbms-suspension-status> element set to "suspending";

ii) shall set the <number-of-reported-bearers> element to the total number of the included <suspended-TMGI> elements and <other-TMGI> elements;

iii) shall include <suspended-TMGI> element(s) set to the TMGI value for each of the MTCHs on the same MCH corresponding to the MBMS bearers about to be suspended; and

iv) may include <other-TMGI> elements, if available, corresponding to the TMGI values for other MTCHs on the same MCH as the MBMS bearers to be suspended

NOTE 3: To report the suspension of MTCHs on different MCHs, the MCVideo client sends a separate message for each of the involved MCHs.

g) if the MBMS bearer is no longer about to be suspended, the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:

i) shall include an <mbms-suspension-status> element set to "not-suspending";

ii) shall set the <number-of-reported-bearers> element to the number of included <suspended-TMGI> elements; and

iii) shall include a <suspended-TMGI> element set to the corresponding TMGI value for each of the MTCHs of the MBMS bearers that are no longer about to be suspended; and

h) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-request-uri> set to the MCVideo ID of the user; and

2) shall send the SIP MESSAGE request according to 3GPP TS 24.229 [11].

NOTE 4: The MCVideo client reports in separate messages the MBMS bearers that are about to be suspended and the MBMS bearers that are no longer about to be suspended.

[TS 24.281, clause 16.2.4]

When the MCVideo client receives a SIP MESSAGE request containing:

1) a P-Asserted-Service header field containing the "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

- 2) with one of the following:
 - a) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body containing an <mbms-explicitMuSiK-download> element with at least one <group> sub element; or
 - b) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body containing an <mbms-defaultMuSiK-download> element with zero or more <group> sub elements;

the MCVideo client shall:

- 1) if the received message contains an <mbms-explicitMuSiK-download> element, set the impacted groups to be those groups identified by the <group> sub elements;
- 2) if the received message contains an <mbms-defaultMuSiK-download> element without <group> sub elements, set the impacted groups to be all groups not associated with currently valid explicit MuSiK downloads; and
- 3) if the received message contains an <mbms-defaultMuSiK-download> element with <group> sub elements, first dissociate those groups identified by the <group> sub elements from currently valid associations with explicit MuSiK downloads and then set the impacted groups to be all groups not associated with currently valid explicit MuSiK downloads.

If the key identifier within the CSB-ID of the MIKEY payload is a MuSiK-ID (4 most-significant bits have the value '6'), the MCVideo client:

- 1) shall process the MIKEY payload according to 3GPP TS 33.180 [8], as follows:
 - a) if the initiator field (IDRi) has type 'URI' (identity hiding is not used), the client:
 - i) shall extract the initiator URI from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]. If the initiator URI deviates from the public service identity of the participating MCVideo function serving the MCVideo client, shall reject the SIP MESSAGE request by sending a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [47], and including warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps; and
 - ii) shall convert the initiator URI to a UID as described in 3GPP TS 33.180 [8];
 - b) otherwise, if the initiator field (IDRi) has type 'UID' (identity hiding in use), the client:
 - i) shall convert the public service identity of participating MCVideo function serving the MCVideo user to a UID as described in 3GPP TS 33.180 [8]; and
 - ii) shall compare the generated UID with the UID in the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]. If the two initiator UIDs deviate from each other, shall reject the SIP MESSAGE request by sending a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [47], and including warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;
 - c) otherwise, shall reject the SIP MESSAGE request by sending a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [47], and including warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;
 - d) shall use the UID to validate the signature of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - e) if authentication verification of the I_MESSAGE fails or the I_MESSAGE does not contain a Status attribute, shall reject the SIP MESSAGE request by sending SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [47], and including warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps; and
 - f) shall examine the Status attribute and shall either mark the associated security functions as "not in use" or shall extract and store the encapsulated MuSiK and the corresponding MuSiK-ID from the payload as specified in 3GPP TS 33.180 [8]; and

- 2) for each of the impacted groups, shall either associate the status 'security not in use' or shall add/replace in the storage associated with the group the MuSiK-ID and the MuSiK, for use (decrypted) as security key for floor control.

NOTE: It is expected that the MCVideo client is capable of storing a different MuSiK for each MCVideo group of interest.

The MCVideo client shall respond with SIP 200 (OK) only if it finds the message syntactically correct and recognizes it as a valid and error-free MuSiK download (default or explicit) message.

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the 'Transmission participant state transition diagram for basic transmission control operation';
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or rejoining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is rejoining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.4.6]

Upon receiving a Transmission Granted message from the transmission control server, the transmission participant:

1. if the first bit in the subtype of the Transmission Granted message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '0' (Transmission Granted); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall store the SSRC of granted transmission participant received in the Transmission Granted message and use it in the RTP media packets until the transmission is released;
3. shall provide Transmission granted notification to the user, if not already done;
4. shall stop timer T100 (Transmission Request); and
5. shall enter the 'U: has permission to transmit' state.

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

[TS 24.581, clause 6.2.4.3.2]

Upon receiving an indication from the user to request permission to send media, the transmission participant:

1. void
2. shall send the Transmission Request message toward the transmission control server; The Transmission Request message:
 - a. if a different priority than the normal priority is required, shall include the Transmission Priority field with the priority not higher than negotiated with the transmission control server as specified in subclause 14.3.3; and
 - b. if the Transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
3. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1; and
4. shall enter the 'U: pending request to transmit' state.

6.8.1.3 Test description

6.8.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration with MBMS according to TS 37.579-1 [2] clause 5.2.2.2.3.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.8.1.3.2

Test procedure sequence

Table 6.8.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo client) request the establishment of a group call with automatic commencement mode and implicit transmission request. (NOTE 1)	-	-	-	-
2	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo CO session establishment/modification without provisional responses other than 100 Trying' as described in TS 37.579-1 [2] Table 5.3B.1.3-1 to establish a group call with automatic commencement mode and implicit transmission control according to option b,ii of NOTE 1 in TS 37.579.1 [2] Table 5.3B.1.3-1?	-	-	1	P
3	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	1	P
4	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
5	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	2	P
6	Check: Does the UE (MCVideo client) correctly perform 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 to receive an MBMS bearer announcement about the availability of an MBMS bearer?	-	-	3	P
7	Check: Does the UE (MCVideo client) correctly perform 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 to send an MBMS Bearer listening status?	-	-	3	P
8	Make the UE (MCVideo client) request transmission. (NOTE 1)	-	-	-	-
9	Check: Does the UE (MCVideo client) send a Transmission Request message?	-->	Transmission Request	2	P
10	The SS (MCVideo server) decides that a MBMS subchannel shall be used for the conversation and sends a Map Group To Bearer message over the general purpose MBMS subchannel. NOTE: The related RRC/NAS signalling is described in TS 37.579-1 [2] clause 5.4.12 'MCX communication over MBMS'. The test sequence below shows only the MCVideo relevant messages exchanged.	<--	Map Group To Bearer	-	-
11	Check: Does the UE (MCVideo client) correctly perform 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 to send an MBMS Bearer listening status report as response to the Map Group To Bearer message?	-	-	4	P
12	The SS (MCVideo server) sends a Transmission Granted message with request for acknowledgement using unicast messaging.	<--	Transmission Granted	-	-
13	Check: Does the UE (MCVideo client) respond with a Transmission Control Ack message?	-->	Transmission Control Ack	5	P
14	Check: Does the UE (MCVideo client) provide transmission granted notification to the user? (NOTE 1)	-	-	5	P

15	Check: Does the UE (MCVideo client) correctly perform 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 to receive a MuSiK download message to set the explicit MuSiK key to be used for the floor control encryption over the MBMS subchannel?	-	-	7	P
16	Make the UE (MCVideo client) request end of transmission. (NOTE 1)	-	-	-	-
17	Check: Does the UE (MCVideo client) correctly perform procedure 'MCVideo transmission End Request CO' as described in TS 37.579-1 [2] Table 5.3B.7.3-1?	-	-	5	P
18	The SS (MCVideo server) ends the conversation on the MBMS subchannel and sends an Unmap Group to Bearer message on the MBMS subchannel. NOTE: The related RRC/NAS signalling is described in TS 37.579-1 [2] clause 5.4.12 'MCX communication over MBMS'. The test sequence below shows only the MCVideo relevant messages exchanged.	<--	Unmap Group to Bearer	-	-
19	Check: Does the UE (MCVideo client) correctly perform 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 to send an MBMS Bearer listening status report as response to the Unmap Group to Bearer message?	-	-	4	P
20	Check: Does the UE (MCVideo client) correctly perform 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 to receive a SIP MESSAGE canceling the MBMS bearer announcement?	-	-	3	P
21	Check: Does the UE (MCVideo client) correctly perform 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 to send an MBMS Bearer listening status report?	-	-	3	P
22	The SS (MCVideo server) sends a Media Transmission Notification message with request for acknowledgment over the unicast channel.	<--	Media Transmission Notification	-	-
23	Check: Does the UE (MCVideo client) respond with a Transmission Control Ack message?	-->	Transmission Control Ack	6	P
24	Check: Does the UE (MCVideo client) provide media transmission notification to the user? (NOTE 1)	-	-	6	P
25	The SS (MCVideo server) sends a Transmission End Notify message over the unicast channel.	<--	Transmission End Notify	-	-
26	Check: Does the UE (MCVideo client) notify the user about the media transmission ended by another user? (NOTE 1)	-	-	6	P
27	The SS (MCVideo server) sends a Transmission Idle message over the unicast channel.	<--	Transmission Idle	-	-
28	Make the UE (MCVideo client) release the call. (NOTE 1)	-	-	-	-
29	Check: Does the UE (MCVideo client) correctly perform procedure 'MCX CO call release' as described in TS 37.579-1 [2] Table 5.3.10.3-1?	-	-	8	P
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

6.8.1.3.3 Specific message contents

Table 6.8.1.3.3-1: SIP INVITE from the UE (Step 2, Table 6.8.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.5.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table 6.8.1.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.8.1.3.3-3			

Table 6.8.1.3.3-2: SDP in SIP INVITE (Table 6.8.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.1-2, condition INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
--

Table 6.8.1.3.3-3: MCVideo-Info in SIP INVITE (Table 6.8.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, INVITE_REFERER

Table 6.8.1.3.3-4: SIP 200 (OK) from the SS (Step 2, Table 6.8.1.3.2-1; Step 4, TS 37.579-1 [2] Table 5.3B.1.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Table 6.8.1.3.3-5			

Table 6.8.1.3.3-5: SDP in SIP 200 (OK) (Table 6.8.1.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2, condition SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

**Table 6.8.1.3.3-6: SIP MESSAGE from the SS (Step 6, Table 6.8.1.3.2-1;
Step 2, TS 37.579-1 [2] Table 5.3.33.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Identity				
name-addr	tsc_MCVideo_PublicSer vicelId_A			
Message-body				
MIME body part		SDP message		
MIME-part-headers				
Content-Type	"application/sdp"			
Content-Disposition	"render"			
MIME-part-body	SDP message as described in Table 6.8.1.3.3-7			
MIME body part		MCVideo MBMS Usage Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.m cvideo-mbms-usage- info+xml"			
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.8.1.3.3-8			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.m cvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.8.1.3.3-9			

Table 6.8.1.3.3-7: SDP in SIP MESSAGE (Table 6.8.1.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.1.2-2				
Information Element	Value/remark	Comment	Reference	Condition
Media description				
media description[1]		m= line media = video		
media	"video"			
port	"9"			
proto	"udp"			
fmt	"MCVideo"			
Connection Data				
nettype	"IN"			
Addrtype	"IP4" or "IP6" depending on IP address			
connection-address	"0.0.0.0" (IPv4) or domain name within ".invalid" DNS top level domain (IPv6)			
media description[2]		m= line media = audio		
media	"audio"			
port	"9"			
proto	"RTP/AVP"			
fmt	"99"			
media title	"speech"			
Connection Data				
nettype	"IN"			
Addrtype	"IP4" or "IP6" depending on IP address			
connection-address	"0.0.0.0" (IPv4) or domain name within ".invalid" DNS top level domain (IPv6)			
media description[3]		m= line media = application		
media	"application"			
port	"9"			
proto	"udp"			
fmt	"MCVideo"			
Connection Data				
nettype	"IN"			
Addrtype	"IP4" or "IP6" depending on IP address			
connection-address	"0.0.0.0" (IPv4) or domain name within ".invalid" DNS top level domain (IPv6)			
media description[4]		m= line media = application		
media	"application"			
port	port number assigned by the SS			
proto	"udp"			
fmt	"MCVideo"			
Connection Data				
nettype	"IN"	c= line		
addrtype	"IP4"			
connection-address	multicast IP assigned by the SS			
media attribute		a= line attribute = key-mgmt		
key-mgmt				
mikey	MIKEY-SAKKE I_MESSAGE as specified in TS 37.579-1 [2], Table 5.5.9.1-2	MSCCK distribution as specified in TS 33.180 [30] Annex H		

Table 6.8.1.3.3-8: MCVideo MBMS Usage Info in SIP MESSAGE (Table 6.8.1.3.3-6)

Derivation Path: TS 24.281 [26], clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status	not present			
mbms-suspension-status	not present			
announcement				
TMGI				
MBMS Service ID	"0F0F0F"	The selected value is randomly chosen - a 6 digit hexadecimal number between 000000 and FFFFFFFF (see TS 23.003 [X] clause 15.2. The coding of the MBMS Service ID is the responsibility of each administration		
MCC	The same value as for PLMN1 specified in Table 5.5.8.1-1	Mobile Country Code		
MNC	The same value as for PLMN1 specified in Table 5.5.8.1-1	Mobile Network Code		
QCI	"67"			
mbms-service-areas	"0"	The selected value is randomly chosen. The value 0 has a special meaning; it shall denote the whole PLMN as the MBMS Service Area		
GPMS	"3"			
version	"1"		TS 24.281 [26] clause 16.3.2	

Table 6.8.1.3.3-9: MCVideo-Info in SIP MESSAGE (Table 6.8.1.3.3-6)

Derivation Path: TS 24.281 [26], clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-user-id	not present			

Table 6.8.1.3.3-10: SIP MESSAGE from the UE (Step 7, Table 6.8.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.32.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo MBMS Usage Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-mbms-usage-info+xml"			
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.8.1.3.3-11			

Table 6.8.1.3.3-11: MCVideo MBMS Usage Info in SIP MESSAGE (Table 6.8.1.3.3-10)

Derivation Path: TS 24.281 [26], clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status			TS 24.281 [26] clause 16.2.3.2	
mbms-listening-status	"listening"			
session-id	not present			
general-purpose	"true"			
TMGI	same value as the announcement in the SIP MESSAGE			
mbms-suspension-status	not present			
announcement	not present			
version	"1"		TS 24.281 [26] clause 16.2.3.2	

Table 6.8.1.3.3-12: Map Group To Bearer from the SS (Step 10, Table 6.8.1.3.2-1)

Derivation Path: TS 24.581 [27], Table 9.3.4-1.			
Information Element	Value/remark	Comment	Condition
RTCP header			
Subtype	00000	Map Group To Bearer	
SSRC	The SSRC of the message sender	The SSRC of the floor control server for on-network and floor arbitrator for off-network. Notation in accordance with clause 5.5.6.1. Coded as specified in IETF RFC 3550 [76].	
name	MCV3		
MCVideo Group ID	px_MCVideo_Group_A_ID	The group ID of the call	
TMGI			
MBMS Service ID	"0F0F0F"	The selected value is randomly chosen - a 6 digit hexadecimal number between 000000 and FFFFFFFF (see TS 23.003 [69] clause 15.2. The coding of the MBMS Service ID is the responsibility of each administration	
MCC	The same value as for PLMN1 specified in TS 37.579-1 [2] Table 5.5.8.1-1	Mobile Country Code	
MNC	The same value as for PLMN1 specified in TS 37.579-1 [2] Table 5.5.8.1-1	Mobile Network Code	
MBMS Subchannel			
Video m-line Number	"1"		
Audio m-line Number	"2"	The number of the "m=audio" m-line in the SIP MESSAGE request announcing the MBMS bearer	
Control m-line Number	"3"		
FEC m-line Number	"0"		
IP version	"0"	'0' = IP version 4 '1' = IP version 6 All other values are reserved for future use	

Derivation Path: TS 24.581 [27], Table 9.3.4-1.			
Information Element	Value/remark	Comment	Condition
Transmission Control Port Number	"9"	The port to be used if the<Floor m-line Number> value is greater than '0'. If the <Floor m-line Number> value is equal to '0', the <Floor control Port Number> value is not included in the MBMS Subchannel field	
Video Media Port Number	"9"		
Audio Media Port Number	"9"		
FEC Port Number	not present		
IP Address	"0.0.0.0"		

Table 6.8.1.3.3-13: SIP MESSAGE from the UE (Step 11, Table 6.8.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.32.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo MBMS Usage Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-mbms-usage-info+xml"			
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.8.1.3.3-14			

Table 6.8.1.3.3-14: MCVideo MBMS Usage Info in SIP MESSAGE (Table 6.8.1.3.3-13)

Derivation Path: TS 24.281 [26], clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status				
mbms-listening-status	"listening"			
session-id	px_session_A_ID			
general-purpose	"true"			
TMGI	same value as the announcement in the SIP MESSAGE			
mbms-suspension-status	not present			
announcement	not present			
version	"1"			

Table 6.8.1.3.3-15: Transmission Granted from the SS (Step 12, Table 6.8.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition ACK

Table 6.8.1.3.3-15A: Transmission Ack from the UE (Step 13, Table 6.8.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.5-1, condition UPLINK
--

Table 6.8.1.3.3-16: SIP MESSAGE from the SS (Step 15, Table 6.8.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.33.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1, condition MIKEY				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Identity				
name-addr	tsc_MCVideo_PublicSer vicelId_A			
Message-body				
MIME body part		MCVideo MBMS Usage Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.m cvideo-mbms-usage- info+xml"			
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.8.1.3.3-17			

Table 6.8.1.3.3-17: MCVideo MBMS Usage Info in SIP MESSAGE (Table 6.8.1.3.3-16)

Derivation Path: TS 24.281 [26], clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status	not present			
mbms-suspension-status	not present			
announcement	not present			
version	"1"			
anyExt				
mbms-explicitMuSiK- download				
group	px_MCVideo_Group_A_ ID			

Table 6.8.1.3.3-18: Unmap Group To Bearer from the SS (Step 18, Table 6.8.1.3.2-1)

Derivation Path: TS 24.581 [27], Table 9.3.5-1.				
Information Element	Value/remark	Comment	Reference	Condition
RTCP header				
Subtype	"00001"	Map Group To Bearer		
SSRC	The SSRC of the message sender	The SSRC of the floor control server for on- network and floor arbitrator for off- network. Notation in accordance with clause 5.5.6.1. Coded as specified in IETF RFC 3550 [76].		
name	MCV3			
MCVideo Group ID	px_MCVideo_Group_A_ ID	The group ID of the call		

**Table 6.8.1.3.3-19: SIP MESSAGE from the UE (Step 19, Table 6.8.1.3.2-1;
Step 2, TS 37.579-1 [2] Table 5.3.32.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo MBMS Usage Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.m cvideo-mbms-usage- info+xml"			
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.8.1.3.3-20			

Table 6.8.1.3.3-20: MCVideo MBMS Usage Info in SIP MESSAGE (Table 6.8.1.3.3-19)

Derivation Path: TS 24.281 [26], clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status				
mbms-listening-status	"not-listening"			
session-id	px_session_A_ID			
general-purpose	not present			
TMGI	same value as the announcement in the SIP MESSAGE			
mbms-suspension-status	not present			
announcement	not present			
version	"1"			

**Table 6.8.1.3.3-21: SIP MESSAGE from the SS (Step 20, Table 6.8.1.3.2-1;
Step 2, TS 37.579-1 [2] Table 5.3.33.3-1)**

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Identity				
name-addr	tsc_MCVideo_PublicSer viceld_A			
Message-body				
MIME body part		MCVideo MBMS Usage Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.m cvideo-mbms-usage- info+xml"			
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.8.1.3.3-21			

Table 6.8.1.3.3-22: MCVideo MBMS Usage Info in SIP MESSAGE (Table 6.8.1.3.3-21)

Derivation Path: TS 24.281 [26], clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status	not present			
mbms-suspension-status	not present			
announcement				
TMGI				
MBMS Service ID	"0F0F0F"	The selected value is randomly chosen - a 6 digit hexadecimal number between 000000 and FFFFFFFF (see TS 23.003 [X] clause 15.2. The coding of the MBMS Service ID is the responsibility of each administration		
MCC	The same value as for PLMN1 specified in Table 5.5.8.1-1	Mobile Country Code		
MNC	The same value as for PLMN1 specified in Table 5.5.8.1-1	Mobile Network Code		
QCI	"67"			
mbms-service-areas	not present			
GPMS	not present			
version	"1"			

Table 6.8.1.3.3-23: SIP MESSAGE from the UE (Step 21, Table 6.8.1.3.2-1; Step 2, TS 37.579-1 [2] Table 5.3.32.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo MBMS Usage Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-mbms-usage-info+xml"			
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.8.1.3.3-24			

Table 6.8.1.3.3-24: MCVideo MBMS Usage Info in SIP MESSAGE (Table 6.8.1.3.3-23)

Derivation Path: TS 24.281 [26], clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status				
mbms-listening-status	"not-listening"			
session-id	not present			
general-purpose	"false"			
TMGI	same value as the announcement in the SIP MESSAGE			
mbms-suspension-status	not present			
announcement	not present			
version	"1"			

Table 6.8.1.3.3-25: Media Transmission Notification from the SS (Step 22, Table 6.8.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.7-1, condition ACK				
Information Element	Value/remark	Comment	Reference	Condition
User ID				
User ID	px_MCVideo_ID_User_B			

Table 6.8.1.3.3-25A: Transmission Ack from the UE (Step 23, Table 6.8.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.3.5-1, condition UPLINK				
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Table 6.8.1.3.3-26: Transmission End Notify from the SS (Step 25, Table 6.8.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.15-1				
Information Element	Value/remark	Comment	Reference	Condition
User ID				
User ID	px_MCVideo_ID_User_B			

Table 6.8.1.3.3-27: Void

6.9 Location

6.9.1 On-network / Location/ Location Information Request

6.9.1.1 Test Purpose (TP)

(1)

with { UE (MCVideo Client) registered and authorized for MCVideo service **and** not in an emergency state **and** having received a location information configuration message providing configuration parameters for both NonEmergencyLocationInformation and EmergencyLocationInformation }
ensure that {

when { UE (MCVideo Client) receives a location information request before the *minimumReportInterval* timer has expired }

then { UE (MCVideo Client) does not wait for the *minimumReportInterval* timer to expire, and, sends "immediately" a SIP MESSAGE containing location information report including information in accordance with the NonEmergencyLocationInformation configuration and the <ReportID> attribute set to the value of the <RequestID> attribute in the received Request, **and**, resets the *minimumReportInterval* timer }

(2)

with { UE (MCVideo Client) registered and authorized for MCVideo service **and** not in an emergency state **and** having received a location information configuration message providing configuration parameters for both NonEmergencyLocationInformation and EmergencyLocationInformation }
ensure that {

when { UE (MCVideo Client) determines that the periodic location reporting trigger has fired **and** the *minimumReportInterval* timer has expired }

then { UE (MCVideo Client) sends a SIP MESSAGE containing location information report including information in accordance with the NonEmergencyLocationInformation configuration and the <TriggerID> attribute set to the value of the <TriggerID> attribute in the received location information configuration message, **and** resets the *minimumReportInterval* timer }

(3)

```

with { UE (MCVideo Client) registered and authorized for MCVideo service and not in an emergency
state and having received a location information configuration message }
ensure that {
  when { UE (MCVideo Client) receives a new location information configuration message and
ConfigScope set to 'Full' }
  then { UE (MCVideo Client) stores the contents of the <Configuration> elements thereby
overriding the previous configuration }
}

```

6.9.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281, clauses 18.3.1, 18.3.2, 18.3.3, 18.3.4.2. Unless otherwise stated, these are Rel-16 requirements.

[TS 24.281 clause 18.3.1]

The MCVideo client sends a location report when one of the trigger criteria is fulfilled or when it receives a request from the participating MCVideo function to send a location report. To send the location report the MCVideo client can use an appropriate SIP message that it needs to send for other reasons, or it can include the location report in a SIP MESSAGE request.

To send a location report, the MCVideo client includes in the SIP MESSAGE request an application/vnd.3gpp.mcvideo-location-info+xml MIME body as specified in clause F.3. The MCVideo client populates the elements in accordance with its reporting configuration. Further location information may also be included in the P-Access-Network-Info header field.

[TS 24.281 clause 18.3.2]

Upon receiving a SIP MESSAGE request containing:

- 1) an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref set to the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- 2) a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml"; and
- 3) an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Configuration> root element included in the <location-info> root element;

then the MCVideo client:

- 1) shall store the contents of the <Configuration> elements;
- 2) shall set the location reporting triggers accordingly; and
- 3) shall start the minimumReportInterval timer.

[TS 24.281 clause 18.3.3]

Upon receiving a SIP MESSAGE request containing

- 1) an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref set to the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- 2) a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml"; and
- 3) an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Request> element included in the <location-info> root element;

then the MCVideo client:

- 1) shall send a location report as specified in clause 18.3.4; and
- 2) shall reset the minimumReportInterval timer.

[TS 24.281 clause 18.3.4.2]

If the MCVideo client does not need to send a SIP request for other reasons, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]. The MCVideo client;

- 1) shall include in the Request-URI, the SIP URI received in the P-Asserted-Identity header field in the received SIP MESSAGE request for location report configuration;
- 2) shall include a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml";
- 3) shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body and in the <location-info> root element include:
 - a) a <Report> element and if the Report was triggered by a location request include the <ReportID> attribute set to the value of the <RequestID> attribute in the received Request;
 - b) a <TriggerId> child element set to the value of each <Trigger-Id> value of the triggers that have fired; and
 - c) the location reporting elements corresponding to the triggers that have fired;
- 4) shall include an Accept-Contact header field with the media feature tag g.3gpp.mcvideo along with parameters "require" and "explicit" in accordance with IETF RFC 3841 [20];
- 5) shall set the minimumReportInterval timer to the minimumReportInterval time and start the timer;
- 6) shall reset all triggers; and
- 7) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

6.9.1.3 Test description

6.9.1.3.1 Pre-test conditions

Test configuration:

- Single cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.1.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.9.1.3.2

Test procedure sequence

Table 6.9.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1-3	Steps 1a1-3 of procedure 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 are performed to configure location reporting with <i>minimumReportInterval</i> timer set to 20s and <i>PeriodicReport</i> reporting interval set to 15s. NOTE: The handling of the <i>PeriodicReport</i> is not tested in this test. It is added here for the purpose of verifying that the UE restarts the <i>minimumReportInterval</i> – when the Periodic report trigger fires before the expiration of the <i>minimumReportInterval</i> the UE needs to wait for its expiry before sending the periodic report.	-	-	-	-
4	Start timer <i>t_Wait</i> =10s (NOTE 1)	-	-	-	-
5	Start timer <i>t_PeriodicReport</i> =15s (<i>PeriodicReport</i> timer set in step 1).	-	-	-	-
5A	The procedure 'MCX communication release' as described in TS 37.579-1 [2] clause 5.4.14 is performed to release the RRC connection.	-	-	-	-
6	<i>t_Wait</i> expires.	-	-	-	-
7-9	Steps 1a1-3 of procedure 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 are performed to request a location report.	-	-	-	-
10-11	Check: Does the UE (MCVideo Client) correctly perform steps 2-3 of procedure 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 before <i>t_PeriodicReport</i> expires to provide location information for the <i>NonEmergencyLocationInformation</i> configured at step 2?	-	-	1	P
12	Start timer <i>t_MinimumReportInterval</i> =20s	-	-	-	-
13	Stop timer <i>t_PeriodicReport</i>	-	-	-	-
13A	The procedure 'MCX communication release' as described in TS 37.579-1 [2] clause 5.4.14 is performed to release the RRC connection.	-	-	-	-
14	<i>t_MinimumReportInterval</i> expires	-	-	-	-
15-17	Check: Does the UE (MCVideo Client) correctly perform steps 1a1-3 of procedure 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 to provide periodic location information?	-	-	2	P
18-19	Check: Does the UE (MCVideo Client) correctly perform step 2-3 of procedure 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 to remove the periodic trigger criteria from the location reporting configuration?	-	-	3	P
20-21	Steps 2-3 of procedure 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 are performed to request a location report.	-	-	-	-
22-23	Check: Does the UE (MCVideo Client) correctly perform steps 2-3 of procedure 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 to provide location information for the configuration done at steps 18-19?	-	-	1	P
24	Check: Does the UE (MCVideo Client) send any SIP MESSAGE in the next 25s?	-->	SIP MESSAGE	2	F
25	The procedure 'MCX communication release' as described in TS 37.579-1 [2] clause 5.4.14 is performed to release the RRC connection.	-	-	-	-

NOTE 1: The value of 10s is arbitrary chosen.

6.9.1.3.3 Specific message contents

Table 6.9.1.3.3-1: SIP MESSAGE from the SS (Step 2, Table 6.9.1.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.33.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1, condition LOCATION-CONFIG				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-info as described in Table 6.9.1.3.3-2			
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.1.3.3-3			

Table 6.9.1.3.3-2: MCVideo-Info in SIP MESSAGE (Table 6.9.1.3.3-1, 6.9.1.3.3-4, 6.9.1.3.3-10, 6.9.1.3.3-12)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-user-id	not present			

Table 6.9.1.3.3-3: Location-Info in SIP MESSAGE (Table 6.9.1.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.2-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Configuration				
NonEmergencyLocationInformation				
ServingEcgi	not present			
NeighbouringEcgi	not present			
MbmsSald	not present			
MbsfnArea	not present			
GeographicalCoordinate	present	Provision of <GeographicalCoordinate> in the report is requested.		
minimumIntervalLength	"20"			
TriggeringCriteria				
PeriodicReport				
extension base	"15"	periodicity of the reports (in seconds)		
TiggerID	"PERIODIC"			

Table 6.9.1.3.3-4: SIP MESSAGE from the SS (Step 8, Table 6.9.1.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.33.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1, condition LOCATION-INFO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-info as described in Table 6.9.1.3.3-2			
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.1.3.3-5			

Table 6.9.1.3.3-5: Location-Info in SIP MESSAGE (Table 6.9.1.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.3-2				
---	--	--	--	--

Table 6.9.1.3.3-6: SIP MESSAGE from the UE (Step 10, Table 6.9.1.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.32.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1, condition LOCATION-INFO				
Information Element	Value/remark	Comment	Reference	Condition
Request-URI	tsc_MCVideo_PublicSe rviceld_PF_A	same URI as provided in the Asserted-Identity header field of the SIP MESSAGE for location reporting configuration		
Message-body				
MIME body part	Not present	MCVideo-Info		
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.1.3.3-7			

Table 6.9.1.3.3-7: Location-Info in SIP MESSAGE (Table 6.9.1.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.1-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Report				
ReportID attribute	"1"	The same as the ID in the request message.		
ReportType attribute	"NonEmergency"			
CurrentLocation		Information corresponding to the location reporting configuration of table 6.9.1.3.3-3		
CurrentServingEcgi	not present			
NeighbouringEcgi	not present			
MbmsSald	not present			
MbsfnArea	not present			
CurrentCoordinate				
longitude	Encrypted <longitude> with any content	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
latitude	Encrypted <latitude> with any content	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		

Table 6.9.1.3.3-8: SIP MESSAGE from the UE (Step 16, Table 6.9.1.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.32.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1, condition LOCATION-INFO				
Information Element	Value/remark	Comment	Reference	Condition
Request-URI	tsc_MCVidéo_PublicSe rviceld_PF_A	same URI as provided in the Asserted-Identity header field of the SIP MESSAGE for location reporting configuration		
Message-body				
MIME body part	Not present	MCVideo-Info		
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.1.3.3-9			

Table 6.9.1.3.3-9: Location-Info in SIP MESSAGE (Table 6.9.1.3.3-8)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.1-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Report				
ReportType attribute	"NonEmergency"			
TriggerID	"PERIODIC"			
CurrentLocation		Information corresponding to the location reporting configuration of table 6.9.1.3.3-3		
CurrentServingEcgi	not present			
NeighbouringEcgi	not present			
MbmsSald	not present			
MbsfnArea	not present			
CurrentCoordinate				
longitude	Encrypted <longitude> with any content	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
latitude	Encrypted <latitude> with any content	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		

Table 6.9.1.3.3-10: SIP MESSAGE from the SS (Step 18, Table 6.9.1.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.33.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1, condition LOCATION-CONFIG				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-info as described in Table 6.9.1.3.3-2			
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.1.3.3-11			

Table 6.9.1.3.3-11: Location-Info in SIP MESSAGE (Table 6.9.1.3.3-10)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.2-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Configuration				
NonEmergencyLocationInformation				
ServingEcgi	present	Provision of <ServingEcgi> in the report is requested.		
NeighbouringEcgi	not present			
MbmsSald	not present			
MbsfnArea	not present			
GeographicalCoordinate	not present			

Table 6.9.1.3.3-12: SIP MESSAGE from the SS (Step 20, Table 6.9.1.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.33.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1, condition LOCATION-INFO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-info as described in Table 6.9.1.3.3-2			
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.1.3.3-13			

Table 6.9.1.3.3-13: Location-Info in SIP MESSAGE (Table 6.9.1.3.3-12)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.3-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Request				
RequestID	"2"	The RequestID that the MCVideo client shall reference in the Report		

Table 6.9.1.3.3-14: SIP MESSAGE from the UE (Step 22, Table 6.9.1.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.32.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1, condition LOCATION-INFO				
Information Element	Value/remark	Comment	Reference	Condition
Request-URI	tsc_MCVideo_PublicSe rviceld_PF_A	same URI as provided in the Asserted-Identity header field of the SIP MESSAGE for location reporting configuration		
Message-body				
MIME body part	Not present	MCVideo-Info		
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.1.3.3-15			

Table 6.9.1.3.3-15: Location-Info in SIP MESSAGE (Table 6.9.1.3.3-14)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.1-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info	present			
Report	present			
ReportID	"2"	The same as the ID in the request message.		
ReportType	"NonEmergency"			
CurrentLocation	present	Information corresponding to the location reporting configuration of table 6.9.1.3.3-8		
CurrentServingEcgi	Encrypted <CurrentServingEcgi> with any content	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
NeighbouringEcgi	not present			
MbmsSaid	not present			
MbsfnArea	not present			
CurrentCoordinate	not present			

6.9.2 On-network / Location / Report triggering

6.9.2.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorized for MCVideo service and not in an emergency state and having received a location information configuration message providing configuration parameters for NonEmergencyLocationInformation requesting indication of ESGIs and location information, and, TriggeringCriteria set to "CellChange", and, a none zero minimumIntervalLength timer }
ensure that {
  when { UE moves to a different cell }
  then { UE (MCVideo Client) sends location report obeying the set in the location configuration parameters for NonEmergencyLocationInformation including waiting for the expiry of minimumReportInterval timer for before reporting }
}
```

(2)

```
with { UE (MCVideo Client) registered and authorized for MCVideo service and not in an emergency state and having received a location information configuration message providing configuration parameters for NonEmergencyLocationInformation requesting indication of ESGIs and location information, and, TriggeringCriteria set to "PlmnChange" and "PeriodicReport", and, a none zero minimumReportInterval timer }
ensure that {
  when { UE moves to a cell belonging to different PLMN however allowed for communication }
  then { UE (MCVideo Client) sends location report obeying the set in the location configuration parameters for NonEmergencyLocationInformation and resets all triggers }
}
```

(3)

```
with { UE (MCVideo Client) registered and authorized for MCVideo service and having received a location information configuration message providing configuration parameters for NonEmergencyLocationInformation requesting indication of ESGIs and location information, and TriggeringCriteria set to "PlmnChange" and "PeriodicReport", and, a none zero minimumIntervalLength timer }
ensure that {
  when { when the PeriodicReport trigger fires }
  then { UE (MCVideo Client) sends location report obeying the set in the location configuration parameters for NonEmergencyLocationInformation }
}
```

6.9.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281, clause 18.3.2, 18.3.4.1, 18.3.4.2. Unless otherwise stated, these are Rel-16 requirements.

[TS24.281 clause 18.3.2]

Upon receiving a SIP MESSAGE request containing:

- 1) an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref set to the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- 2) a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml"; and
- 3) an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Configuration> root element included in the <location-info> root element;

then the MCVideo client:

- 1) shall store the contents of the <Configuration> elements;
- 2) shall set the location reporting triggers accordingly; and
- 3) shall start the minimumReportInterval timer.

[TS 24.281 clause 18.3.4.1]

If a location reporting trigger fires the MCVideo client checks if the minimumReportInterval timer is running. If the timer is running the MCVideo client waits until the timer expires. When the minimumReportInterval timer expires, the MCVideo client:

- 1) shall, if any of the reporting triggers are still true, send a location information report as specified in clause 18.3.4.2.

If the MCVideo client receives a location information request as specified in clause 18.3.3, the MCVideo client shall send a location report as specified in clause 18.3.4.2.

[TS 24.281 clause 18.3.4.2]

If the MCVideo client needs to send a SIP request for other reasons (e.g. a SIP MESSAGE request containing an MBMS listening report as described in clause 16), the MCVideo client:

- 1) shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body and in the <location-info> root element the MCVideo client shall include:
 - a) a <Report> element and if the Report was triggered by a location request include the <ReportID> attribute set to the value of the <RequestID> attribute in the received Request;
 - b) <TriggerId> child elements, where each element is set to the value of the <Trigger-Id> attribute associated with the trigger that have fired; and
 - c) the location reporting elements corresponding to the triggers that have fired;
- 2) shall set the minimumReportInterval timer to the minimumReportInterval time and start the timer; and
- 3) shall reset all triggers.

If the MCVideo client does not need to send a SIP request for other reasons, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]. The MCVideo client:

- 1) shall include in the Request-URI, the SIP URI received in the P-Asserted-Identity header field in the received SIP MESSAGE request for location report configuration;
- 2) shall include a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml";
- 3) shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body and in the <location-info> root element include:

- a) a <Report> element and if the Report was triggered by a location request include the <ReportID> attribute set to the value of the <RequestID> attribute in the received Request;
 - b) a <TriggerId> child element set to the value of each <Trigger-Id> value of the triggers that have fired; and
 - c) the location reporting elements corresponding to the triggers that have fired;
- 4) shall include an Accept-Contact header field with the media feature tag g.3gpp.mcvideo along with parameters "require" and "explicit" in accordance with IETF RFC 3841 [20];
 - 5) shall set the minimumReportInterval timer to the minimumReportInterval time and start the timer;
 - 6) shall reset all triggers; and
 - 7) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

6.9.2.3 Test description

6.9.2.3.1 Pre-test conditions

Test configuration:

- Multi-cell configuration according to TS 37.579-1 [2] clause 5.2.2.2.2 with 3 cells according to the initial conditions of procedure 'MCX communication in E-UTRA / Change of cells' as described in TS 37.579-1 [2] clause 5.4.9.
- GNSS simulator to simulate a location.

Preamble:

- The UE has performed procedure 'Initial registration' as described in TS 37.579-1 [2] clause 5.4.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 to provide a location, as defined in TS 36.508 [24] Table 4.11.2-2, step 1 of scenario #4.
- UE States at the end of the preamble:
 - The UE is in RRC_IDLE state.
 - The client is registered for MCVideo.

6.9.2.3.2

Test procedure sequence

Table 6.9.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
2-4	Steps 1a1-3 of procedure 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 are performed to configure location reporting with <i>minimumIntervalLength</i> timer set to 25s. NOTE: The SS sends a location reporting configuration containing the cell change trigger criteria and the minimum report interval. Provision of serving and neighbouring cells ECGIs is requested in addition to the Location Information.	-	-	-	-
5	SS starts timer=25 sec (the non-emergency <i>minimumReportInterval</i> interval length defined in the SIP MESSAGE sent in step 3 as <i>minimumIntervalLength</i>).	-	-	-	-
-	EXCEPTION: SS releases the E-UTRA connection	-	-	-	-
6	Trigger the GNSS simulator to start step 2 of Scenario #4 to simulate the UE moving to location #7 inside Geographical area #1 as defined in TS 36.508 [24] Table 4.11.2-2.	-	-	-	-
7	Wait 10 sec to allow the simulated location to move approximately 100 m from the original location to location #7.	-	-	-	-
8	Make the SS simulate cell change (same PLMN) as described in TS 37.579-1 [2], clause 5.4.9 'MCX communication in E-UTRA / Change of cells' steps 1 and 2. The test sequence below shows only the MCVideo relevant messages exchanged. NOTE: Cell 2 and Cell 1 will be active.	-	-	-	-
9	Timer=25 sec expires.	-	-	-	-
10-12	Check: Does the UE (MCVideo Client) correctly perform steps 1a1-3 of procedure 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 to send a SIP MESSAGE containing the Cell change trigger identification along with the location information report, the current location coordinates as specified in step 3, and, the ECGIs of Cells 1 and 2?	-	-	1	P
13-14	Steps 2-3 of procedure 'MCX SIP MESSAGE CT' as described in TS 37.579-1 [2] Table 5.3.33.3-1 are performed to configure location reporting. NOTE: The SS sends a location reporting configuration containing the PLMN change trigger criteria, and, periodic trigger criteria with <i>PeriodicReport</i> reporting interval set to 60 sec and the minimum report interval. Provision of cells ECGIs is requested in addition to the Location Information. The <i>minimumReportInterval</i> time is set to 10 sec.	-	-	-	-

15	SS starts timer=60 sec (the <i>PeriodicReport</i> interval defined in the SIP MESSAGE sent in step 13). NOTE: The value of 60 sec has been chosen arbitrary however if the behaviour described in steps 16-21 takes longer than 60 sec then this value needs to be adjusted.	-	-	-	-
-	EXCEPTION: SS releases the E-UTRA connection	-	-	-	-
16	Trigger the GNSS simulator to start step 4 of Scenario #4 to simulate the UE moving to location #8 inside Geographical area #1 as defined in TS 36.508 [24] Table 4.11.2-2.	-	-	-	-
17	Wait 10 sec to allow the simulated location to move approximately 100 m from the original location to location #8.	-	-	-	-
18	Make the SS simulate PLMN change as described in TS 37.579-1 [2], clause 5.4.9 'MCX communication in E-UTRA / Change of cells' steps 3 and 4. The test sequence below shows only the MCVideo relevant messages exchanged. NOTE: Cell 4 only will be active.	-	-	-	-
19-21	Check: Does the UE (MCVideo Client) correctly perform steps 1a1-3 of procedure 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 to send a SIP MESSAGE containing the PLMN change trigger identification along with the location information report, the current location coordinates as specified in step 13, and the ECGI of cell 4 (the only cell being active at this moment of time)? NOTE: The minimumReportInterval time (set in step 13 as minimumIntervalLength = 10 sec.) has already expired latest at the end of step 16.	-	-	2	P
22	SS cancels Timer=60.	-	-	-	-
23	SS starts Timer=60.	-	-	-	-
-	EXCEPTION: SS releases the E-UTRA connection	-	-	-	-
24	Timer=60 sec expires	-	-	-	-
25	Check: Does the UE (MCVideo Client) correctly perform the procedure 'MCX SIP MESSAGE CO' as described in TS 37.579-1 [2] Table 5.3.32.3-1 to send a SIP MESSAGE containing the periodic trigger identification along with location information report after the non-emergency minimum interval length expired? NOTE: The minimumReportInterval time (set in step 13 as minimumIntervalLength = 10 sec.) has already expired before step 24.	-	-	3	P

6.9.2.3.3 Specific message contents

Table 6.9.2.3.3-1: SIP MESSAGE from the SS (Step 3, Table 6.9.2.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.33.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body	MIME body not including MCPTT-Info and not including MCPTT-Affiliation-Command	not including any MIME body part with Content-Type being "application/vnd.3gpp.mcptt-info+xml" or "application/vnd.3gpp.mcptt-affiliation-command+xml"		
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-info as described in Table 6.9.2.3.3-2			
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.2.3.3-3			

Table 6.9.2.3.3-2: MCVideo-Info in SIP MESSAGE (Table 6.9.2.3.3-1, Table 6.9.2.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-user-id	not present			

Table 6.9.2.3.3-3: Location-Info in SIP MESSAGE (Table 6.9.2.3.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.2-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Configuration				
NonEmergencyLocationInformation				
MbmsSald	not present	Provision of information in the report is not requested.		
MbsfnArea	not present	Provision of information in the report is not requested.		
minimumIntervalLength	"25"	the value in seconds		
EmergencyLocationInformation"				
MbmsSald	not present	Provision of information in the report is not requested.		
MbsfnArea	not present	Provision of information in the report is not requested.		
minimumIntervalLength	"30"	the value in seconds		
TriggeringCriteria				
CellChange				
AnyCellChange				
TriggerID	"CELLCHANGE"			

Table 6.9.2.3.3-4: SIP MESSAGE from the UE (Step 11, Table 6.9.2.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.32.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part	Not present	MCVideo-Info		
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.2.3.3-5			

Table 6.9.2.3.3-5: Location-Info in SIP MESSAGE (Table 6.9.2.3.3-4)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.1-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Report				
ReportType	"NonEmergency"			
TriggerID	"CELLCHANGE"			
CurrentLocation				
CurrentServingEcgi	Encrypted - The E-UTRAN Cell Global Identification (ECGI) of Cell 2	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
NeighbouringEcgi	Encrypted - The ECGI of Cell 1	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
CurrentCoordinate		The location simulated by the GNSS simulator at the time of transmission of the message.		
longitude	Encrypted - The longitude value as specified for location number #7 defined in TS 36.508 [24] Table 4.11.2-3 +/- 0.00016 degrees.	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
latitude	Encrypted - The latitude value as specified for location number #7 defined in TS 36.508 [24] Table 4.11.2-3 +/- 0.00013 degrees.	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		

Table 6.9.2.3.3-6: SIP MESSAGE from the SS (Step 13, Table 6.9.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-info as described in Table 6.9.2.3.3-2			
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.2.3.3-7			

Table 6.9.2.3.3-7: Location-Info in SIP MESSAGE (Table 6.9.2.3.3-6)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.2-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Configuration				
NonEmergencyLocationInformation				
MbmsSald	not present	Provision of information in the report is not requested.		
MbsfnArea	not present	Provision of information in the report is not requested.		
EmergencyLocationInformation				
MbmsSald	not present	Provision of information in the report is not requested.		
MbsfnArea	not present	Provision of information in the report is not requested.		
minimumIntervalLength	"70"	the value in seconds		
TriggeringCriteria				
PLMNChange				
AnyPLMNChange				
TriggerID	"ANY PLMN"			
PeriodicReport				
extension base	"60"	the value in seconds of the time which determines the periodic provision of the report		
TiggerID	"PERIODIC"			

Table 6.9.2.3.3-8: SIP MESSAGE from the UE (Step 20, Table 6.9.2.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.32.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part	Not present	MCVideo-Info		
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.2.3.3-9			

Table 6.9.2.3.3-9: Location-Info in SIP MESSAGE (Table 6.9.2.3.3-8)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.1-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Report				
ReportType	"NonEmergency"			
TriggerID	"ANY PLMN"			
CurrentLocation				
CurrentServingEcgi	Encrypted - The ECGI of Cell 4	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
NeighbouringEcgi	not present	Only Cell 4 is active at this moment of time (see TS 37.579-1 [2], clause 5.4.9)		
CurrentCoordinate		The location simulated by the GNSS simulator at the time of transmission of the message.		
longitude	Encrypted - The longitude value as specified for location number #8 defined in TS 36.508 [24] Table 4.11.2-3 +/- 0.00016 degrees.	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
latitude	Encrypted - The latitude value as specified for location number #8 defined in TS 36.508 [24] Table 4.11.2-3 +/- 0.00013 degrees.	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		

Table 6.9.2.3.3-10: SIP MESSAGE from the UE (Step 25, Table 6.9.2.3.2-1; step 2, TS 37.579-1 [2], Table 5.3.32.3-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.2.7.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part	Not present	MCVideo-Info		
MIME body part		Location-info	TS 24.281 [26] clause F.3	
MIME-part-body	Location-info as described in Table 6.9.2.3.3-11			

Table 6.9.2.3.3-11: Location-Info in SIP MESSAGE (Table 6.9.2.3.3-10)

Derivation Path: TS 37.579-1 [2], Table 5.5.3.4.1-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Report				
ReportType	"NonEmergency"			
TriggerID	"PERIODIC"			
CurrentLocation				
CurrentServingEcgi	Encrypted - The ECGI of Cell 4	Encryption according to NOTE 2 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
NeighbouringEcgi	not present	Only Cell 4 is active at this moment of time (see TS 37.579-1 [2], clause 5.4.9)		
CurrentCoordinate		The location simulated by the GNSS simulator at the time of transmission of the message.		
longitude	Encrypted - The longitude value as specified for location number #8 defined in TS 36.508 [24] Table 4.11.2-3 +/- 0.00016 degrees.	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		
latitude	Encrypted - The latitude value as specified for location number #8 defined in TS 36.508 [24] Table 4.11.2-3 +/- 0.00013 degrees.	Encryption according to NOTE 1 in TS 37.579-1 [2] Table 5.5.3.4.1-2		

7 Off-Network Test Scenarios

7.1 Group Calls

7.1.1 Basic Group Calls

7.1.1.1 Off-network / Group Call / Basic Group Call / Transmission Control / Upgrade to Emergency Call / Downgrade from Emergency Call / Upgrade to Imminent Peril Call / Downgrade from Imminent Peril Call / Release call / Client Originated (CO)

7.1.1.1.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
initiate/cancel group calls in off-network environment, and the UE (MCVideo Client) is in an off-
network environment }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo group call }
  then { UE (MCVideo Client) requests a group call by sending a GROUP CALL PROBE message and, upon
not receiving a response to the GROUP CALL PROBE, sends a GROUP CALL ANNOUNCEMENT message }
}

```


(2)

```

with { UE (MCVideo Client) having established an off-network MCVideo Pre-arranged Group Call }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User(s) }
  then { UE (MCVideo Client) respects the transmission control imposed by the transmission control
entity/arbitrator (Transmission Granted, Transmission Arbitration Release, Transmission Request )
}

```

(3)

```

with { UE (MCVideo Client) having established an off-network group call and the MCVideo User being
authorised for initiating an MCVideo emergency group call }
ensure that {
  when { the MCVideo User requests to upgrade the ongoing off-network MCVideo group call to an
MCVideo emergency group call }
  then { UE (MCVideo Client) sends a GROUP CALL ANNOUNCEMENT message }
}

```

(4)

```

with { UE (MCVideo Client) having upgraded to an off-network emergency group call }
ensure that {
  when { the MCVideo User continues communication with the invited MCVideo User(s) }
  then { UE (MCVideo Client) respects the transmission control imposed by the transmission control
entity/arbitrator }
}

```

(5)

```

with { UE (MCVideo Client) having upgraded to an off-network emergency group call and the MCVideo
User being authorised for cancelling an MCVideo emergency state }
ensure that {
  when { the MCVideo User requests to cancel the ongoing MCVideo Emergency state }
  then { UE (MCVideo Client) sends a GROUP CALL EMERGENCY END message }
}

```

(6)

```

with { UE (MCVideo Client) having established an off-network group call and the MCVideo User being
authorised for initiating an MCVideo imminent peril group call }
ensure that {
  when { the MCVideo User requests to upgrade the ongoing off-network MCVideo group call to an
MCVideo imminent peril group call }
  then { UE (MCVideo Client) sends a GROUP CALL ANNOUNCEMENT message }
}

```

(7)

```

with { UE (MCVideo Client) having upgraded to an off-network imminent peril group call }
ensure that {
  when { the MCVideo User continues communication with the invited MCVideo User(s) }
  then { UE (MCVideo Client) respects the transmission control imposed by the transmission control
entity/arbitrator }
}

```

(8)

```

with { UE (MCVideo Client) having upgraded to an off-network imminent peril group call and the
MCVideo User being authorised for cancelling an MCVideo imminent peril state }
ensure that {
  when { the MCVideo User requests to cancel the ongoing MCVideo imminent peril state }
  then { UE (MCVideo Client) sends a GROUP CALL IMMINENT PERIL END message }
}

```

7.1.1.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in:

TS 24.281 clauses 9.3.2.4.2.1, 9.3.2.4.2.2, 9.3.2.4.3.1, 9.3.2.4.3.6, 9.3.3.4.7.1, 9.3.3.4.8.1, 9.3.3.4.8.4, TS 24.581 clauses 7.2.3.2.2, 7.2.3.5.2, 7.2.3.5.5, 7.2.3.3.2, 7.2.3.7.7. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.3.2.4.2.1]

When in the "S1: start-stop" state, upon an indication from an MCVideo user to initiate a group call for an MCVideo group ID, the MCVideo client:

- 1) shall store the MCVideo group ID as the MCVideo group ID of the call;
- 2) shall create a call type control state machine as described in clause 9.3.3.2;
- 3) shall generate a GROUP CALL PROBE message as specified in clause 17.1.2. In the GROUP CALL PROBE message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
- 4) shall send the GROUP CALL PROBE message as specified in clause 9.3.1.1.1;
- 5) shall start timer TFG3 (call probe retransmission);
- 6) shall start timer TFG1 (wait for call announcement); and
- 7) shall enter the "S2: waiting for call announcement" state.

[TS 24.281, clause 9.3.2.4.2.2]

When in the "S2: waiting for call announcement" state, upon expiration of TFG3 (call probe retransmission), the MCVideo client:

- 1) shall generate a GROUP CALL PROBE message as specified in clause 17.1.2. In the GROUP CALL PROBE message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
- 2) shall send the GROUP CALL PROBE message as specified in clause 9.3.1.1.1;
- 3) shall start timer TFG3 (call probe retransmission); and
- 4) shall remain in the "S2: waiting for call announcement" state.

[TS 24.281, clause 9.3.2.4.3.1]

When in the "S2: waiting for call announcement" state, upon expiry of timer TFG1 (wait for call announcement), the MCVideo client:

- 1) shall stop timer TFG3 (call probe retransmission), if running;
- 2) shall generate an SDP body as specified in clause 9.3.1.1.2 and store it as the SDP body of the call;
- 3) shall generate a random number with uniform distribution between 0 and 65535 and store it as the call identifier of the call;
- 4) shall select refresh interval value and store it as the refresh interval of the call;
- 5) shall store own MCVideo user ID as the originating MCVideo user ID of the call;
- 6) shall store the current UTC time as the call start time of the call;
- 7) shall generate a GROUP CALL ANNOUNCEMENT message as specified in clause 17.1.3. In the GROUP CALL ANNOUNCEMENT message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier of the call;
 - b) shall set the Call type IE to the stored current call type associated with the call type control state machine;
 - c) shall set the Refresh interval IE to the stored refresh interval of the call;
 - d) shall set the SDP IE to the stored SDP body of the call;
 - e) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call;

- f) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
 - g) shall set the Call start time IE to the stored call start time of the call;
 - h) shall set the Last call type change time IE to the stored last call type change time of the call associated with call type control state machine;
 - i) shall set the Last user to change call type IE to last user to change call type associated with call type control state machine; and
 - j) may include the Confirm mode indication IE;
- 8) shall send the GROUP CALL ANNOUNCEMENT message as specified in clause 9.3.1.1.1;
- 9) shall establish a media session based on the stored SDP body of the call;
- 10) shall start transmission control as originating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
- 11) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;
- 12) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and
- 13) shall enter the "S3: part of ongoing call" state.

Note: In this release of the specification, the refresh interval of the call is fixed to 10 seconds.

[TS 24.281, clause 9.3.2.4.3.6]

When in the "S3: part of ongoing call" state, upon receiving a GROUP CALL ACCEPT message with the MCVideo group ID IE matching the stored MCVideo group ID of the call, the MCVideo client:

- 1) can inform the MCVideo user about the call acceptance; and
- 2) shall remain in the "S3: part of ongoing call" state.

[TS 24.281, clause 9.3.3.4.7.1]

When in the "T2: in-progress basic group call" state, upon receiving an indication from the user to upgrade the call to "IMMINENT PERIL GROUP CALL" or "EMERGENCY GROUP CALL" or when in the "T3: in-progress imminent peril group call" state, upon receiving an indication from the user to upgrade the call to "EMERGENCY GROUP CALL", the MCVideo client:

- 1) if the user request is to upgrade the call to "EMERGENCY GROUP CALL" and the value of `"<x>/<x>/OffNetwork/EmergencyCallChange"` leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true":
 - a) shall set the stored current call type to "EMERGENCY GROUP CALL";
 - b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];
 - c) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1;
 - d) shall stop timer TFG14 (implicit downgrade imminent peril), if running; and
 - e) shall enter "T1: in-progress emergency group call" state;
- 2) if the user request is to upgrade the call to "IMMINENT PERIL GROUP CALL" and the value of `"<x>/<x>/OffNetwork/ImminentPerilCallChange"` leaf node present in the user profile as specified in 3GPP TS 24.483 [4] set to "true":
 - a) shall set the stored current call type to "IMMINENT PERIL GROUP CALL";
 - b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];

- c) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2 and
 - d) shall enter "T3: in-progress imminent peril group call" state;
- 3) shall store the current UTC time as last call type change time of the call;
 - 4) shall store own MCVideo user ID as last user to change call type of the call;
 - 5) shall generate a GROUP CALL ANNOUNCEMENT message as specified in clause 17.1.3. In the GROUP CALL ANNOUNCEMENT message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier of the call associated with the basic call control state machine;
 - b) shall set the Call type IE to the stored current call type;
 - c) shall set the Refresh interval IE to the stored refresh interval of the call associated with the basic call control state machine;
 - d) shall set the SDP IE to the stored SDP body of the call associated with the basic call control state machine;
 - e) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call associated with the basic call control state machine;
 - f) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call associated with the basic call control state machine;
 - g) shall set the call start time IE to the stored call start time of the call;
 - h) shall set the Last call type change time IE to the stored last call type change time of the call; and
 - i) shall set the Last user to change call type IE to the stored last user to change call type of the call; and
 - 6) shall send the GROUP CALL ANNOUNCEMENT message as specified in clause 9.3.1.1.1;

[TS 24.281, clause 9.3.3.4.8.1]

When in the "T1: in-progress emergency group call" state, upon receiving an indication from:

- 1) the MCVideo user who upgraded the MCVideo group call; or
- 2) an authorized MCVideo user with the value of
"/<x>/<x>/Common/MCVideoGroupCall/EmergencyCall/CancelMCVideoGroup" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true",

to downgrade "EMERGENCY GROUP CALL", the MCVideo client:

- 1) shall set the stored current call type to "BASIC GROUP CALL";
- 2) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];
- 3) shall set current UTC time as last call type change time of the call;
- 4) shall store own MCVideo user ID as last user to change call type of the call;
- 5) shall generate a GROUP CALL EMERGENCY END message as specified in clause 17.1.1.13. In the GROUP CALL EMERGENCY END message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier of the call associated with the basic call control state machine;
 - b) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call associated with the basic call control state machine;
 - c) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call associated with the basic call control state machine;

- d) shall set the Last call type change time IE to the stored last call type change time of the call; and
- e) shall set the Last user to change call type IE to the stored last user to change call type of the call;
- 6) shall send the GROUP CALL EMERGENCY END message as specified in clause 9.3.1.1.1;
- 7) shall stop timer TFG13 (implicit downgrade emergency);
- 8) shall initialize the counter CFG11 (emergency end retransmission) with value set to 1;
- 9) shall start timer TFG11 (emergency end retransmission); and
- 10) shall enter the "T2: in-progress basic group call" state.

[TS 24.281, clause 9.3.3.4.8.4]

When in the "T3: in-progress imminent peril group call" state, upon receiving an indication from:

- 1) the MCVideo user who upgraded the call; or
- 2) an authorized user with the value of "`<x>/Common/MCVideoGroupCall/ImminentPerilCall/Cancel`" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true",

to downgrade "IMMINENT PERIL GROUP CALL", the MCVideo client:

- 1) shall set the stored current call type to "BASIC GROUP CALL";
- 2) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];
- 3) shall set current UTC time as last call type change time of the call;
- 4) shall store own MCVideo user ID as last user to change call type of the call;
- 5) shall generate a GROUP CALL IMMINENT PERIL END message as specified in clause 17.1.1.12. In the GROUP CALL IMMINENT PERIL END message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier of the call associated with the basic call control state machine;
 - b) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call associated with the basic call control state machine;
 - c) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call associated with the basic call control state machine;
 - d) shall set the Last call type change time IE to the stored last call type change time of the call; and
 - e) shall set the Last user to change call type IE to the stored last user to change call type of the call;
- 6) shall send the GROUP CALL IMMINENT PERIL END message as specified in clause 9.3.1.1.1;
- 7) shall stop timer TFG14 (implicit downgrade imminent peril);
- 8) shall initialize the counter CFG12 (imminent peril end retransmission) with value set to 1;
- 9) shall start timer TFG12 (imminent peril end retransmission); and
- 10) shall enter the "T2: in-progress basic group call" state.

[TS 24.581, clause 7.2.3.2.2]

When an MCVideo call is established with session announcement including an explicit transmission request, the originating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;

2. shall send Transmission Granted message towards other transmission participants. The Transmission Granted message:
 - a. shall include the granted priority in the Transmission priority field;
 - b. shall include the MCVideo user's own MCVideo ID in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types; and
3. shall enter 'O: transmission arbitration' state.

[TS 24.581, clause 7.2.3.5.2]

Upon receiving encoded media from the user or if encoded media is already buffered the transmission participant:

1. shall start timer T206 (Stop talking warning);
2. shall request the MCVideo client to start sending RTP media packets towards other MCVideo clients; and
3. shall remain in 'O: transmission arbitration' state.

[TS 24.581, clause 7.2.3.5.5]

Upon receiving an indication from the MCVideo user to release permission to send RTP media and there is no transmitter in transmitter list, the transmission participant:

1. shall stop timer T206 (Stop talking warning), if running;
2. shall stop timer T207 (Stop talking), if running;
3. shall send a Transmission Arbitration Release message towards other transmission participants. The Transmission Arbitration Release message:
 - a. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - b. if the session is not initiated as a broadcast group call with the B-bit set to '1' (Broadcast group call), shall include a Transmission Indicator field set to '0' (normal call);
4. shall start timer T230 (Inactivity); and
5. shall enter 'O: silence' state.

[TS 24.581, clause 7.2.3.5.5]

If the transmission participant receives an indication from the MCVideo user to send media, the transmission participant:

1. shall send the Transmission Request message to other transmission participants. The Transmission Request message:
 - a. if a priority different than the default transmission priority is required, shall include the Transmission Priority field with the requested priority in the <Transmission Priority> element;
 - b. shall include the MCVideo ID of the MCVideo user in the <User ID> value of the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall initialise the counter C201 (Transmission request) with value set to 1;
3. shall stop timer T230 (Inactivity);
4. shall start timer T201 (Transmission Request); and
5. shall enter 'O: pending request' state.

[TS 24.581, clause 7.2.3.7.7]

Upon receiving Transmission Granted message and if the <User ID> value in the User ID field matches its own MCVideo ID and User ID of transmission participant sending the Transmission Granted message matches the stored User ID of current transmission arbitrator, the transmission participant:

1. shall stop timer T201 (Transmission Request);
2. may provide a transmission granted notification to the MCVideo user; and
3. shall enter 'O: has permission' state.

Otherwise, if the <User ID> value in the User ID field matches its own MCVideo ID and there is no stored User ID of the current transmission arbitrator, the transmission participant:

1. shall set the stored User ID of the current transmission arbitrator to User ID of transmission participant sending the Transmission Granted message;
2. shall stop timer T201 (Transmission Request);
3. may provide a transmission granted notification to the MCVideo user; and
4. shall enter 'O: has permission' state.

7.1.1.1.3 Test description

7.1.1.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.1.1.1.3.2 Test procedure sequence

Table 7.1.1.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
4	Make the UE (MCVideo Client) initiate an off-network group call with an explicit transmission request. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo off-network call establishment are described in TS 37.579-1 [2] clause 5.4.11 'MCX CO communication over ProSe direct one-to-many communication out of E-UTRA coverage / Monitoring/Discoverer procedure for group member discovery / One-to-many communication'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
5	Check: Does the UE (MCVideo Client) send a GROUP CALL PROBE message to determine the current call status of the group? (NOTE 2)	-->	GROUP CALL PROBE	1	P
-	EXCEPTION: Step 6 is executed a total of 3 times	-	-	-	-
6	Check: At the expiration of timer TFG3 (call probe retransmission), does the UE (MCVideo Client) send a retransmission of the GROUP CALL PROBE sent in step 5?	-->	GROUP CALL PROBE	1	P
7	Check: At the expiration of timer TFG1 (wait for call announcement), and after receiving no response to the GROUP CALL PROBE, does the UE (MCVideo Client) send a GROUP CALL ANNOUNCEMENT message to initiate an off-network group call?	-->	GROUP CALL ANNOUNCEMENT	1	P
8	The SS-UE1 (MCVideo Client) sends a GROUP CALL ACCEPT accepting the GROUP CALL ANNOUNCEMENT.	<--	GROUP CALL ACCEPT	-	-
9	Check: Does the UE (MCVideo Client) send a Transmission Granted message towards the other transmission participants?	-->	Transmission Granted	2	P
10	Make the MCVideo User release transmission control. (NOTE 1), (NOTE 3)	-	-	-	-
11	Check: Does the UE (MCVideo Client) send a Transmission Arbitration Release message to the other transmission participants?	-->	Transmission Arbitration Release	2	P
12	Make the MCVideo User request to send media. (NOTE 1)	-	-	-	-
13	Check: Does the UE (MCVideo Client) send a Transmission Request message to the transmission participants?	-->	Transmission Request	2	P
14	The SS-UE1 (MCVideo Client) sends a Transmission Granted message to the UE (MCVideo Client).	<--	Transmission Granted	-	-

15	Make the UE (MCVideo Client) upgrade the off-network group call to an emergency call. (NOTE 1)	-	-	-	-
16	Check: Does the UE (MCVideo Client) send a GROUP CALL ANNOUNCEMENT to upgrade the call to an emergency call?	-->	GROUP CALL ANNOUNCEMENT	3	P
17	Check: Does the UE (MCVideo Client) send a Transmission Granted message towards the other transmission participants?	-->	Transmission Granted	4	P
18	Make the MCVideo User release transmission control. (NOTE 1)	-	-	-	-
19	Check: Does the UE (MCVideo Client) send a Transmission Arbitration Release message to the other transmission participants?	-->	Transmission Arbitration Release	4	P
20	Check: Does the UE (MCVideo Client) send a GROUP CALL EMERGENCY END to downgrade the emergency call?	-->	GROUP CALL EMERGENCY END	5	P
21	Make the UE (MCVideo Client) upgrade the off-network group call to an imminent peril call (NOTE 1)	-	-	-	-
22	Check: Does the UE (MCVideo Client) send a GROUP CALL ANNOUNCEMENT to upgrade the call to an imminent peril call?	-->	GROUP CALL ANNOUNCEMENT	6	P
23	Check: Does the UE (MCVideo Client) send a Transmission Granted message towards the other transmission participants?	-->	Transmission Granted	7	P
24	Make the MCVideo User release transmission control. (NOTE 1)	-	-	-	-
25	Check: Does the UE (MCVideo Client) send a Transmission Release message to the other transmission participants?	-->	Transmission Arbitration Release	7	P
26	Make the UE (MCVideo Client) downgrade the off-network group call from an imminent peril call (NOTE 1)	-	-	-	-
27	Check: Does the UE (MCVideo Client) send a GROUP CALL IMMEDIATE PERIL END to downgrade the imminent peril call?	-->	GROUP CALL IMMEDIATE PERIL END	8	P
28	Make the UE (MCVideo Client) release the group call. (NOTE 1)	-	-	-	-
-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					
NOTE 2: Timer TFG3 (call probe retransmission)=40ms as defined in TS 37.579-1 [2], Table 5.5.8.1-1 and TFG1 (wait for call announcement)=150ms as defined in TS 37.579-1 [2], Table 5.5.8.1-1 are started upon the sending of the GROUP CALL PROBE message					
NOTE 3: If the MCVideo User does not release transmission control before timer T207 (Stop talking) expires, then the MCVideo Client will enter the 'O: silence' state per TS 24.581 [27] and the remaining steps will not be valid. Timer T206 (Stop talking warning) is started upon the sending of the Transmission Granted message. Timer T207 (Stop talking) starts upon the expiration of Timer T206 (Stop talking warning). Default value of Timer T206 (Stop talking warning)=27s according to TS 24.581 [27]. Default value of T207 (Stop talking) is 3s according to TS 24.581 [27].					

7.1.1.1.3.3 Specific message contents

Table 7.1.1.1.3.3-1: GROUP CALL ACCEPT (step 8, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.3-1			
Information Element	Value/remark	Comment	Condition
Sending MCVidéo user ID	px_MCVidéo_ID_User_B		

Table 7.1.1.1.3.3-2: Transmission Granted (steps 9, 14, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK

Table 7.1.1.1.3.3-3: Transmission Arbitration Release (step 11, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.4-1, condition OFF-NETWORK

Table 7.1.1.1.3.3-4: Transmission Request (step 13, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.1.1-1, condition OFF-NETWORK

Table 7.1.1.1.3.3-5: GROUP CALL ANNOUNCEMENT (step 16, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.2-1, condition EMERGENCY-CALL
--

Table 7.1.1.1.3.3-6: Transmission Granted (step 17, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK, EMERGENCY-CALL

Table 7.1.1.1.3.3-7: Transmission Arbitration Release (step 19, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.4-1, condition OFF-NETWORK, EMERGENCY-CALL

Table 7.1.1.1.3.3-8: GROUP CALL ANNOUNCEMENT (step 22, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.2-1, condition IMPERIL-CALL
--

Table 7.1.1.1.3.3-9: Transmission Granted (step 23, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK, IMPERIL-CALL

Table 7.1.1.1.3.3-10: Transmission Arbitration Release (step 25, Table 7.1.1.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.4-1, condition OFF-NETWORK, IMPERIL-CALL

7.1.1.2 Off-network / Group Call / Transmission Control / Upgrade to Emergency Call / Downgrade from Emergency Call / Upgrade to Imminent Peril Call / Downgrade from Imminent Peril Call / Release call / Client Terminated (CT)

7.1.1.2.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
receive group calls in off-network environment, and the UE (MCVideo Client) is in an off-network
environment }
ensure that {
  when { UE (MCVideo Client) receives a GROUP CALL ANNOUNCEMENT message with Confirm mode indication
present }
  then { UE (MCVideo Client) sends a GROUP CALL ACCEPT message}
}
```

(2)

```
with { UE (MCVideo Client) being in an off-network MCVideo Pre-arranged Group Call }
ensure that {
  when { the MCVideo User (MCVideo Client) engages in communication with the MCVideo User(s) }
  then { UE (MCVideo Client) respects the transmission control imposed by the transmission control
entity/arbitrator }
}
```

(3)

```
with { UE (MCVideo Client) being in an upgraded off-network emergency group call }
ensure that {
  when { the MCVideo User continues communication with the MCVideo User(s) }
  then { UE (MCVideo Client) respects the transmission control imposed by the transmission control
entity/arbitrator }
}
```

(4)

```
with { UE (MCVideo Client) being in an upgraded off-network imminent peril group call }
ensure that {
  when { the MCVideo User continues communication with the MCVideo User(s) }
  then { UE (MCVideo Client) respects the transmission control imposed by the transmission control
entity/arbitrator }
}
```

7.1.1.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 9.3.2.4.3.3, 9.3.3.4.7.2, 9.3.3.4.8.3, 9.3.3.4.8.6, TS 24.581 clauses 7.2.3.2.3, 7.2.3.3.4, 7.2.3.4.2, 7.2.3.7.3. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.3.2.4.3.3]

When in the "S1: start-stop" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE not matching MCVideo group ID of the call stored for other state machines, the MCVideo client:

- 1) shall store the value of the SDP IE of the GROUP CALL ANNOUNCEMENT message as the SDP body of the call;
- 2) shall store the value of the Call identifier IE of the GROUP CALL ANNOUNCEMENT message as the call identifier of the call;
- 3) shall store the value of the Originating MCVideo user ID IE of the GROUP CALL ANNOUNCEMENT message as the originating MCVideo user ID of the call;
- 4) shall store the value of the Refresh interval IE of the GROUP CALL ANNOUNCEMENT message as the refresh interval of the call;

- 5) shall store the value of the MCVidéo group ID IE of the GROUP CALL ANNOUNCEMENT message as the MCVidéo group ID of the call;
- 6) shall store the value of the Call start time IE of the GROUP CALL ANNOUNCEMENT message as the call start time of the call;
- 7) shall create a call type control state machine as described in clause 9.3.3.2;
- 8) if the terminating UE is configured that the terminating MCVidéo user acknowledgement is required upon a terminating call request reception:
 - a) shall start timer TFG4 (waiting for the user);
 - b) if the GROUP CALL ANNOUNCEMENT message contains the Confirm mode indication IE, shall enter the "S5: pending user action with confirm indication" state; and
 - c) if the GROUP CALL ANNOUNCEMENT message does not contain the Confirm mode indication IE, shall enter the "S4: pending user action without confirm indication" state; and
- 9) if the terminating UE is configured that the terminating MCVidéo user acknowledgement is not required upon a terminating call request reception:
 - a) shall establish a media session based on the stored SDP body of the call;
 - b) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
 - c) if the GROUP CALL ANNOUNCEMENT message contains the Confirm mode indication IE:
 - i) shall generate a GROUP CALL ACCEPT message as specified in clause 17.1.4. In the GROUP CALL ACCEPT message, the MCVidéo client:
 - A) shall set the Call identifier IE to the stored call identifier of the call;
 - B) shall set the Sending MCVidéo user ID IE to own MCVidéo user id;
 - C) shall set the Call type IE to the stored current call type associated with the call type control state machine; and
 - D) shall set the MCVidéo group ID IE to the stored MCVidéo group ID of the call; and
 - ii) shall send the GROUP CALL ACCEPT message as specified in clause 9.3.1.1.1;
 - d) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;
 - e) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and
 - f) shall enter the "S3: part of ongoing call" state.

[TS 24.281, clause 9.3.3.4.7.2]

When in the "T1: in-progress emergency group call" state or "T2: in-progress basic group call" state or "T3: in-progress imminent peril group call" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVidéo group ID IE matching with MCVidéo group ID of the ongoing call and the Call Identifier IE being the same as the stored call identifier of the call, the MCVidéo client:

- 1) if the stored last user to change call type of the call is same as the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message and the stored last call type change time is smaller than Last call type change time IE of the GROUP CALL ANNOUNCEMENT message:
 - a) shall set the stored last call type change time of the call to Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;
 - b) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL" and the stored call type is other than "EMERGENCY GROUP CALL":
 - i) shall set the stored current call type to "EMERGENCY GROUP CALL";

- ii) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];
 - iii) shall stop timer TFG14 (implicit downgrade imminent peril), if running;
 - iv) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1; and
 - v) shall enter "T1: in-progress emergency group call" state;
- c) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL" and the stored call type is other than "IMMINENT PERIL GROUP CALL":
- i) shall set the stored current call type to "IMMINENT PERIL GROUP CALL";
 - ii) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];
 - iii) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2; and
 - iv) shall enter "T3: in-progress imminent peril group call" state; and
- d) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "BASIC GROUP CALL" and the stored call type is other than "BASIC GROUP CALL":
- i) shall set the stored current call type to "BASIC GROUP CALL";
 - ii) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];
 - iii) shall stop timer TFG13 (implicit downgrade), if running; and
 - iv) shall enter "T2: in-progress basic group call" state; and
- 2) if the stored last user to change call type of the call is different from the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message and:
- a) if the stored call type is same as Call type IE in the received GROUP CALL ANNOUNCEMENT message and the stored last call type change time is smaller than Last call type change time IE of the GROUP CALL ANNOUNCEMENT message:
- i) shall set the stored last call type change time of the call to Last call type change time IE of the GROUP CALL ANNOUNCEMENT message; and
 - ii) shall set the stored last user to change call type of the call to Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;
- b) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL" and the stored call type is other than "EMERGENCY GROUP CALL":
- i) shall set the stored last call type change time of the call to Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;
 - ii) shall set the stored last user to change call type of the call to Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;
 - iii) shall set the stored current call type to "EMERGENCY GROUP CALL";
 - iv) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];
 - v) shall stop timer TFG14 (implicit downgrade imminent peril), if running;
 - vi) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1; and
 - vii) shall enter "T1: in-progress emergency group call" state; and

- c) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL" and the stored call type is "BASIC GROUP CALL":
- i) shall set the stored last call type change time of the call to Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;
 - ii) shall set the stored last user to change call type of the call to Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;
 - iii) shall set the stored current call type to "IMMINENT PERIL GROUP CALL ";
 - iv) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];
 - v) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2; and
 - vi) shall enter "T3: in-progress imminent peril group call" state.

[TS 24.281, clause 9.3.3.4.8.3]

When in the "T1: in-progress emergency group call" state, upon receiving GROUP CALL EMERGENCY END message, the MCVideo client:

- 1) shall set the stored last call type change time to the Last call type change time IE of the received GROUP CALL EMERGENCY END message;
- 2) shall set the stored last user to change call type to the Last user to change call type IE of the received GROUP CALL EMERGENCY END message;
- 3) shall set the stored current call type to "BASIC GROUP CALL";
- 4) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];
- 5) shall stop timer TFG13 (implicit downgrade emergency); and
- 6) shall enter the "T2: in-progress basic group call" state.

[TS 24.281, clause 9.3.3.4.8.6]

When in the "T3: in-progress imminent peril group call" state, upon receiving GROUP CALL IMMINENT PERIL END message, the MCVideo client:

- 1) shall set the stored last call type change time to the Last call type change time IE of the received GROUP CALL IMMINENT PERIL END message;
- 2) shall set the stored last user to change call type to the Last user to change call type IE of the received GROUP CALL IMMINENT PERIL END message;
- 3) shall set the stored current call type to "BASIC GROUP CALL";
- 4) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];
- 5) shall stop timer TFG14 (implicit downgrade imminent peril); and
- 6) shall enter the "T2: in-progress basic group call" state.

[TS 24.581, clause 7.2.3.2.3]

When an MCVideo call is established the terminating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
2. shall start timer T230 (Inactivity); and

3. shall enter 'O: silence' state.

[TS 24.581, clause 7.2.3.3.4]

When a Transmission Granted message is received and if the User ID in the Transmission Granted message does not match its own User ID, the transmission participant:

1. may provide a transmission taken notification to the MCVideo user;
2. if the Transmission Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating that this is a broadcast group call;
3. shall stop timer T230 (Inactivity);
4. shall start timer T203 (End of RTP media) and store the identity of the user, to whom the transmission was granted in the Transmission Granted message, in transmitter list; and
5. shall enter 'O: has no permission' state.

[TS 24.581, clause 7.2.3.4.2]

If the transmission participant receives an indication from the MCVideo user that the MCVideo user wants to send media, the transmission participant:

1. shall send the Transmission Request message to other clients. The Transmission Request message:
 - a. if a priority different than the default transmission priority is required, shall include the Transmission Priority field with the requested priority in the <Transmission Priority> element;
 - b. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall initialise the counter C201 (Transmission request) with value set to 1;
3. shall start timer T201 (Transmission Request); and
4. shall enter 'O: pending request' state.

[TS 24.581, clause 7.2.3.7.3]

Upon receiving Transmission Rejected message, if the <User ID> value in the User ID field matches its own MCVideo ID and User ID of transmission participant sending the Transmission Rejected message matches the stored User ID of current transmission arbitrator, the transmission participant:

Editor's Note: How a new participant obtains the identity of the transmission arbitrator is FFS.

1. shall stop the timer T201 (Transmission Request);
2. shall provide transmission deny notification to the user;
3. may display the transmission deny reason to the user using information in the Reject Cause field; and
4. shall enter 'O: has no permission' state.

Otherwise, if the <User ID> value in the User ID field matches its own MCVideo ID and there is no stored the current transmission arbitrator, the transmission participant:

1. shall stop the timer T201 (Transmission Request);
2. shall set the stored User ID of the current transmission arbitrator to the value in the User ID of transmission control server field as received in the Transmission Rejected message;
3. shall provide transmission deny notification to the user;
4. may display the transmission deny reason to the user using information in the Reject Cause field; and

5. shall enter 'O: has no permission' state.

7.1.1.2.3 Test description

7.1.1.2.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.1.1.2.3.2 Test procedure sequence

Table 7.1.1.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE.	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.10 'MCX CT communication over ProSe direct one-to-many communication out of E-UTRA coverage / Announcing/Discoveree procedure for group member discovery'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
4	SS-UE1 (MCVideo client) sends a GROUP CALL ANNOUNCEMENT	<--	GROUP CALL ANNOUNCEMENT	-	-
5	Check: Does the UE (MCVideo Client) send a GROUP CALL ACCEPT message?	-->	GROUP CALL ACCEPT	1	P
6	SS-UE1 (MCVideo client) sends a Transmission Granted message notifying the recipients that it now has transmission control.	<--	Transmission Granted	-	-
7	Make the MCVideo User request to send media. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo Client) send a Transmission Request message?	-->	Transmission Request	2	P
9	SS-UE1 (MCVideo client) sends a Transmission Granted message notifying the recipients that it now has transmission control.	<--	Transmission Rejected	-	-
10	Check: Does the UE (MCVideo Client) provide transmission deny notification to the MCVideo User? (NOTE 1)	-	-	2	P
11	The SS-UE1 (MCVideo client) sends a GROUP CALL ANNOUNCEMENT to upgrade the call to an emergency call.	<--	GROUP CALL ANNOUNCEMENT	-	-
12	SS-UE1 (MCVideo client) sends a Transmission Granted message notifying the recipients that it now has transmission control.	<--	Transmission Granted	-	-
13	Make the MCVideo User request to send media. (NOTE 1)	-	-	-	-
14	Check: Does the UE (MCVideo Client) send a Transmission Request message?	-->	Transmission Request	3	P
15	SS-UE1 (MCVideo client) sends a Transmission Granted message notifying the recipients that it now has transmission control.	<--	Transmission Rejected	-	-
16	Check: Does the UE (MCVideo Client) provide transmission deny notification to the MCVideo User? (NOTE 1)	-	-	3	P
17	The SS-UE1 (MCVideo client) sends a GROUP CALL EMERGENCY END to downgrade the emergency call.	<--	GROUP CALL EMERGENCY END	-	-

18	The SS-UE1 (MCVideo client) sends a GROUP CALL ANNOUNCEMENT to upgrade the call to an imminent peril call.	<--	GROUP CALL ANNOUNCEMENT	-	-
19	SS-UE1 (MCVideo client) sends a Transmission Granted message notifying the recipients that it now has transmission control.	<--	Transmission Granted	-	-
20	Make the MCVideo User request to send media. (NOTE 1)	-	-	-	-
21	Check: Does the UE (MCVideo Client) send a Transmission Request message?	-->	Transmission Request	4	P
22	SS-UE1 (MCVideo client) sends a Transmission Granted message notifying the recipients that it now has transmission control.	<--	Transmission Rejected	-	-
23	Check: Does the UE (MCVideo Client) provide transmission deny notification to the MCVideo User? (NOTE 1)	-	-	4	P
24	The SS-UE1 (MCVideo client) sends a GROUP CALL IMMEDIATE PERIL END to downgrade the imminent peril call	<--	GROUP CALL IMMEDIATE PERIL END	-	-
-	EXCEPTION: SS releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.7 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the SS'.	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

7.1.1.2.3.3 Specific message contents

Table 7.1.1.2.3.3-1: GROUP CALL ANNOUNCEMENT (step 4, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.2-1			
Information Element	Value/remark	Comment	Condition
SDP	As described in TS37.579-1 [2], Table 5.5.3.1.4-2		
Originating MCPTT user ID	px_MCVideo_ID_User_B		

Table 7.1.1.2.3.3-2: Transmission Granted (step 6, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK			
Information Element	Value/remark	Comment	Condition
User ID			
User ID	px_MCVideo_ID_User_B		

Table 7.1.1.2.3.3-3: Transmission Request (step 8, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.1.1-1, condition OFF-NETWORK

Table 7.1.1.2.3.3-4: Transmission Rejected (step 9, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.2-1, condition OFF-NETWORK

Table 7.1.1.2.3.3-5: GROUP CALL ANNOUNCEMENT (step 11, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.2-1, condition EMERGENCY-CALL			
Information Element	Value/remark	Comment	Condition
SDP	As described in TS37.579-1 [2], Table 5.5.3.1.4-2		
Originating MCPTT user ID	px_MCVideo_ID_User_B		

Table 7.1.1.2.3.3-6: Transmission Granted (step 12, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK, EMERGENCY-CALL			
Information Element	Value/remark	Comment	Condition
User ID			
User ID	px_MCVideo_ID_User_B		

Table 7.1.1.2.3.3-7: Transmission Request (step 14, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.1.1-1, condition OFF-NETWORK, EMERGENCY-CALL			
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Table 7.1.1.2.3.3-8: Transmission Rejected (step 15, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.2-1, condition OFF-NETWORK, EMERGENCY-CALL			
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Table 7.1.1.2.3.3-9: GROUP CALL EMERGENCY END (step 17, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.4-1, condition OFF-NETWORK			
Information Element	Value/remark	Comment	Condition
Originating MCVideo user ID	px_MCVideo_ID_User_B		

Table 7.1.1.2.3.3-10: GROUP CALL ANNOUNCEMENT (step 18, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.2-1, condition IMPERIL-CALL			
Information Element	Value/remark	Comment	Condition
SDP	As described in TS37.579-1 [2], Table 5.5.3.1.4-2		
Originating MCPTT user ID	px_MCVideo_ID_User_B		

Table 7.1.1.2.3.3-11: Transmission Granted (step 19, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK, IMPERIL-CALL			
Information Element	Value/remark	Comment	Condition
User ID			
User ID	px_MCVideo_ID_User_B		

Table 7.1.1.2.3.3-12: Transmission Request (step 21, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.1.1-1, condition OFF-NETWORK, IMPERIL-CALL			
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Table 7.1.1.2.3.3-13: Transmission Rejected (step 22, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.2-1, condition OFF-NETWORK, IMPERIL-CALL			
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Table 7.1.1.2.3.3-14: GROUP CALL IMMINENT PERIL END (step 24, Table 7.1.1.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.5-1, condition OFF-NETWORK			
Information Element	Value/remark	Comment	Condition
Originating MCVideo user ID	px_MCVideo_ID_User_B		

7.1.1.3 Off-network / Group Call / Emergency Call / Client Originated (CO)

7.1.1.3.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
initiate/cancel emergency group calls in off-network environment, and the UE (MCVideo Client) is in
an off-network environment }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo emergency group call }
  then { UE (MCVideo Client) requests an MCPTT emergency group call by sending a GROUP CALL
ANNOUNCEMENT message, and respects the transmission control imposed by the transmission control
entity/arbitrator }
}

```

7.1.1.3.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in:

TS 24.281 clauses 9.3.2.4.2.1, 9.3.2.4.2.2, 9.3.2.4.3.1, TS 24.581 clauses 7.2.3.2.2, 7.2.3.5.2, 7.2.3.5.5. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.3.2.4.2.1]

When in the "S1: start-stop" state, upon an indication from an MCVideo user to initiate a group call for an MCVideo group ID, the MCVideo client:

- 1) shall store the MCVideo group ID as the MCVideo group ID of the call;
- 2) shall create a call type control state machine as described in clause 9.3.3.2;
- 3) shall generate a GROUP CALL PROBE message as specified in clause 17.1.2. In the GROUP CALL PROBE message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
- 4) shall send the GROUP CALL PROBE message as specified in clause 9.3.1.1.1;
- 5) shall start timer TFG3 (call probe retransmission);
- 6) shall start timer TFG1 (wait for call announcement); and
- 7) shall enter the "S2: waiting for call announcement" state.

[TS 24.281, clause 9.3.2.4.2.2]

When in the "S2: waiting for call announcement" state, upon expiration of TFG3 (call probe retransmission), the MCVideo client:

- 1) shall generate a GROUP CALL PROBE message as specified in clause 17.1.2. In the GROUP CALL PROBE message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
- 2) shall send the GROUP CALL PROBE message as specified in clause 9.3.1.1.1;
- 3) shall start timer TFG3 (call probe retransmission); and
- 4) shall remain in the "S2: waiting for call announcement" state.

[TS 24.281, clause 9.3.2.4.3.1]

When in the "S2: waiting for call announcement" state, upon expiry of timer TFG1 (wait for call announcement), the MCVideo client:

- 1) shall stop timer TFG3 (call probe retransmission), if running;
- 2) shall generate an SDP body as specified in clause 9.3.1.1.2 and store it as the SDP body of the call;
- 3) shall generate a random number with uniform distribution between 0 and 65535 and store it as the call identifier of the call;
- 4) shall select refresh interval value and store it as the refresh interval of the call;
- 5) shall store own MCVideo user ID as the originating MCVideo user ID of the call;
- 6) shall store the current UTC time as the call start time of the call;
- 7) shall generate a GROUP CALL ANNOUNCEMENT message as specified in clause 17.1.3. In the GROUP CALL ANNOUNCEMENT message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier of the call;
 - b) shall set the Call type IE to the stored current call type associated with the call type control state machine;
 - c) shall set the Refresh interval IE to the stored refresh interval of the call;
 - d) shall set the SDP IE to the stored SDP body of the call;
 - e) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call;
 - f) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
 - g) shall set the Call start time IE to the stored call start time of the call;
 - h) shall set the Last call type change time IE to the stored last call type change time of the call associated with call type control state machine;
 - i) shall set the Last user to change call type IE to last user to change call type associated with call type control state machine; and
 - j) may include the Confirm mode indication IE;
- 8) shall send the GROUP CALL ANNOUNCEMENT message as specified in clause 9.3.1.1.1;
- 9) shall establish a media session based on the stored SDP body of the call;
- 10) shall start transmission control as originating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
- 11) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;
- 12) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and
- 13) shall enter the "S3: part of ongoing call" state.

Note: In this release of the specification, the refresh interval of the call is fixed to 10 seconds.

[TS 24.581, clause 7.2.3.2.2]

When an MCVideo call is established with session announcement including an explicit transmission request, the originating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
2. shall send Transmission Granted message towards other transmission participants. The Transmission Granted message:

- a. shall include the granted priority in the Transmission priority field;
 - b. shall include the MCVideo user's own MCVideo ID in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types; and
3. shall enter 'O: transmission arbitration' state.

[TS 24.581, clause 7.2.3.5.2]

Upon receiving encoded media from the user or if encoded media is already buffered the transmission participant:

1. shall start timer T206 (Stop talking warning);
2. shall request the MCVideo client to start sending RTP media packets towards other MCVideo clients; and
3. shall remain in 'O: transmission arbitration' state.

[TS 24.581, clause 7.2.3.5.5]

Upon receiving an indication from the MCVideo user to release permission to send RTP media and there is no transmitter in transmitter list, the transmission participant:

1. shall stop timer T206 (Stop talking warning), if running;
2. shall stop timer T207 (Stop talking), if running;
3. shall send a Transmission Arbitration Release message towards other transmission participants. The Transmission Arbitration Release message:
 - a. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - b. if the session is not initiated as a broadcast group call with the B-bit set to '1' (Broadcast group call), shall include a Transmission Indicator field set to '0' (normal call);
4. shall start timer T230 (Inactivity); and
5. shall enter 'O: silence' state.

7.1.1.3.3 Test description

7.1.1.3.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.1.1.3.3.2 Test procedure sequence

Table 7.1.1.3.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
4	Make the UE (MCVideo Client) initiate an off-network emergency group call with an explicit transmission request. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo off-network call establishment are described in TS 37.579-1 [2] clause 5.4.11 'MCX CO communication over ProSe direct one-to-many communication out of E-UTRA coverage / Monitoring/Discoverer procedure for group member discovery / One-to-many communication'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
5	Check: Does the UE (MCVideo Client) send a GROUP CALL PROBE message to determine the current call status of the group? (NOTE 2)	-->	GROUP CALL PROBE	1	P
-	EXCEPTION: Step 6 is executed a total of 3 times	-	-	-	-
6	Check: At the expiration of timer TFG3 (call probe retransmission), does the UE (MCVideo Client) send a retransmission of the GROUP CALL PROBE sent in step 5?	-->	GROUP CALL PROBE	1	P
7	Check: At the expiration of timer TFG1 (wait for call announcement), and after receiving no response to the GROUP CALL PROBE, does the UE (MCVideo Client) send a GROUP CALL ANNOUNCEMENT message to initiate an off-network emergency group call?	-->	GROUP CALL ANNOUNCEMENT	1	P
8	The SS-UE1 (MCVideo Client) sends a GROUP CALL ACCEPT accepting the GROUP CALL ANNOUNCEMENT.	<--	GROUP CALL ACCEPT	-	-
9	Check: Does the UE (MCVideo Client) send a Transmission Granted message towards the other transmission participants?	-->	Transmission Granted	1	P
10	Make the MCVideo User release transmission control. (NOTE 1), (NOTE 3)	-	-	-	-
11	Check: Does the UE (MCVideo Client) send a Transmission Arbitration Release message to the other transmission participants?	-->	Transmission Arbitration Release	1	P
12	Make the UE (MCVideo Client) release the emergency group call. (NOTE 1)	-	-	-	-

-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
<p>NOTE 1: This is expected to be done via a suitable implementation dependent MMI.</p> <p>NOTE 2: Timer TFG3 (call probe retransmission)=40ms as defined in TS 37.579-1 [2], Table 5.5.8.1-1 and TFG1 (wait for call announcement)=150ms as defined in TS 37.579-1 [2], Table 5.5.8.1-1 are started upon the sending of the GROUP CALL PROBE message</p> <p>NOTE 3: If the MCVideo User does not release transmission control before timer T207 (Stop talking) expires, then the MCVideo Client will enter the 'O: silence' state per TS 24.581 [27] and the remaining steps will not be valid. Timer T206 (Stop talking warning) is started upon the sending of the Transmission Granted message. Timer T207 (Stop talking) starts upon the expiration of Timer T206 (Stop talking warning). Default value of Timer T206 (Stop talking warning)=27s according to TS 24.581 [27]. Default value of T207 (Stop talking) is 3s according to TS 24.581 [27].</p>					

7.1.1.3.3.3 Specific message contents

Table 7.1.1.3.3.3-1: GROUP CALL ANNOUNCEMENT (step 7, Table 7.1.1.3.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.2-1, condition EMERGENCY-CALL

Table 7.1.1.3.3.3-2: GROUP CALL ACCEPT (step 8, Table 7.1.1.3.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.3-1, condition EMERGENCY-CALL			
Information Element	Value/remark	Comment	Condition
Sending MCVideo user ID	px_MCVideo_ID_User_B		

Table 7.1.1.3.3.3-3: Transmission Granted (step 9, Table 7.1.1.3.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK, EMERGENCY-CALL

Table 7.1.1.3.3.3-4: Transmission Arbitration Release (step 11, Table 7.1.1.3.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.4-1, condition OFF-NETWORK, EMERGENCY-CALL

7.1.1.4 Off-network / Group Call / Emergency Call / Client Terminated (CT)

7.1.1.4.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
receive emergency group calls in off-network environment, and the UE (MCVideo Client) is in an off-
network environment }
ensure that {
  when { UE (MCVideo Client) receives a GROUP CALL ANNOUNCEMENT message for an emergency group call
with Confirm mode indication present }
  then { UE (MCVideo Client) sends a GROUP CALL ACCEPT message and respects the transmission
control imposed by the transmission control entity/arbitrator }
}
    
```

7.1.1.4.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 9.3.2.4.3.3, 9.3.3.4.5, TS 24.581 clauses 7.2.3.2.3, 7.2.3.3.4, 7.2.3.4.2, 7.2.3.7.3. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.3.2.4.3.3]

When in the "S1: start-stop" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE not matching MCVideo group ID of the call stored for other state machines, the MCVideo client:

- 1) shall store the value of the SDP IE of the GROUP CALL ANNOUNCEMENT message as the SDP body of the call;
- 2) shall store the value of the Call identifier IE of the GROUP CALL ANNOUNCEMENT message as the call identifier of the call;
- 3) shall store the value of the Originating MCVideo user ID IE of the GROUP CALL ANNOUNCEMENT message as the originating MCVideo user ID of the call;
- 4) shall store the value of the Refresh interval IE of the GROUP CALL ANNOUNCEMENT message as the refresh interval of the call;
- 5) shall store the value of the MCVideo group ID IE of the GROUP CALL ANNOUNCEMENT message as the MCVideo group ID of the call;
- 6) shall store the value of the Call start time IE of the GROUP CALL ANNOUNCEMENT message as the call start time of the call;
- 7) shall create a call type control state machine as described in clause 9.3.3.2;
- 8) if the terminating UE is configured that the terminating MCVideo user acknowledgement is required upon a terminating call request reception:
 - a) shall start timer TFG4 (waiting for the user);
 - b) if the GROUP CALL ANNOUNCEMENT message contains the Confirm mode indication IE, shall enter the "S5: pending user action with confirm indication" state; and
 - c) if the GROUP CALL ANNOUNCEMENT message does not contains the Confirm mode indication IE, shall enter the "S4: pending user action without confirm indication" state; and
- 9) if the terminating UE is configured that the terminating MCVideo user acknowledgement is not required upon a terminating call request reception:
 - a) shall establish a media session based on the stored SDP body of the call;
 - b) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
 - c) if the GROUP CALL ANNOUNCEMENT message contains the Confirm mode indication IE:
 - i) shall generate a GROUP CALL ACCEPT message as specified in clause 17.1.4. In the GROUP CALL ACCEPT message, the MCVideo client:
 - A) shall set the Call identifier IE to the stored call identifier of the call;
 - B) shall set the Sending MCVideo user ID IE to own MCVideo user id;
 - C) shall set the Call type IE to the stored current call type associated with the call type control state machine; and
 - D) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call; and
 - ii) shall send the GROUP CALL ACCEPT message as specified in clause 9.3.1.1.1;
 - d) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;

- e) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and
- f) shall enter the "S3: part of ongoing call" state.

[TS 24.281, clause 9.3.3.4.5]

When in the "T0: waiting for the call to establish" state, upon receipt of a GROUP CALL ANNOUNCEMENT message by an idle MCVideo client when MCVideo user acknowledgement is not required, the MCVideo client:

- 1) shall set the stored last call type change time to the Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;
- 2) shall set the last user to change call type to the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;
- 3) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL":
 - a) shall set the stored current call type to "EMERGENCY GROUP CALL";
 - b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];
 - c) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1; and
 - d) shall enter "T1: in-progress emergency group call" state;
- 4) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL":
 - a) shall set the stored current call type to "IMMINENT PERIL GROUP CALL";
 - b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];
 - c) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2; and
 - d) shall enter "T3: in-progress imminent peril group call" state; and
- 5) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "BASIC GROUP CALL":
 - a) shall set the stored current call type to "BASIC GROUP CALL";
 - b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4]; and
 - c) shall enter "T2: in-progress basic group call" state.

[TS 24.581, clause 7.2.3.2.3]

When an MCVideo call is established the terminating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
2. shall start timer T230 (Inactivity); and
3. shall enter 'O: silence' state.

[TS 24.581, clause 7.2.3.3.4]

When a Transmission Granted message is received and if the User ID in the Transmission Granted message does not match its own User ID, the transmission participant:

1. may provide a transmission taken notification to the MCVideo user;
2. if the Transmission Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating that this is a broadcast group call;

3. shall stop timer T230 (Inactivity);
4. shall start timer T203 (End of RTP media) and store the identity of the user, to whom the transmission was granted in the Transmission Granted message, in transmitter list; and
5. shall enter 'O: has no permission' state.

[TS 24.581, clause 7.2.3.4.2]

If the transmission participant receives an indication from the MCVideo user that the MCVideo user wants to send media, the transmission participant:

1. shall send the Transmission Request message to other clients. The Transmission Request message:
 - a. if a priority different than the default transmission priority is required, shall include the Transmission Priority field with the requested priority in the <Transmission Priority> element;
 - b. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall initialise the counter C201 (Transmission request) with value set to 1;
3. shall start timer T201 (Transmission Request); and
4. shall enter 'O: pending request' state.

[TS 24.581, clause 7.2.3.7.3]

Upon receiving Transmission Rejected message, if the <User ID> value in the User ID field matches its own MCVideo ID and User ID of transmission participant sending the Transmission Rejected message matches the stored User ID of current transmission arbitrator, the transmission participant:

Editor's Note: How a new participant obtains the identity of the transmission arbitrator is FFS.

1. shall stop the timer T201 (Transmission Request);
2. shall provide transmission deny notification to the user;
3. may display the transmission deny reason to the user using information in the Reject Cause field; and
4. shall enter 'O: has no permission' state.

Otherwise, if the <User ID> value in the User ID field matches its own MCVideo ID and there is no stored the current transmission arbitrator, the transmission participant:

1. shall stop the timer T201 (Transmission Request);
2. shall set the stored User ID of the current transmission arbitrator to the value in the User ID of transmission control server field as received in the Transmission Rejected message;
3. shall provide transmission deny notification to the user;
4. may display the transmission deny reason to the user using information in the Reject Cause field; and
5. shall enter 'O: has no permission' state.

7.1.1.4.3 Test description

7.1.1.4.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo client)

- For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)

-- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.1.1.4.3.2 Test procedure sequence

Table 7.1.1.4.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE.	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.10 'MCX CT communication over ProSe direct one-to-many communication out of E-UTRA coverage / Announcing/Discoveree procedure for group member discovery'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
4	SS-UE1 (MCVideo client) sends a GROUP CALL ANNOUNCEMENT for an emergency group call.	<--	GROUP CALL ANNOUNCEMENT	-	-
5	Check: Does the UE (MCVideo Client) send a GROUP CALL ACCEPT message?	-->	GROUP CALL ACCEPT	1	P
6	SS-UE1 (MCVideo client) sends a Transmission Granted message notifying the recipients that it now has transmission control.	<--	Transmission Granted	-	-
7	Make the MCVideo User request to send media. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo Client) send a Transmission Request message?	-->	Transmission Request	1	P
9	SS-UE1 (MCVideo client) sends a Floor Granted message notifying the recipients that it now has transmission control.	<--	Transmission Rejected	-	-
10	Check: Does the UE (MCVideo Client) provide transmission deny notification to the MCVideo User? (NOTE 1)	-	-	1	P
-	EXCEPTION: SS releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.7 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the SS'.	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

7.1.1.4.3.3 Specific message contents

Table 7.1.1.4.3.3-1: GROUP CALL ANNOUNCEMENT (step 4, Table 7.1.1.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.2-1, condition EMERGENCY-CALL			
Information Element	Value/remark	Comment	Condition
SDP	As described in TS37.579-1 [2], Table 5.5.3.1.4-2		
Originating MCPTT user ID	px_MCVideo_ID_User_B		

Table 7.1.1.4.3.3-2: GROUP CALL ACCEPT (step 5, Table 7.1.1.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.3-1, condition EMERGENCY-CALL
--

Table 7.1.1.4.3.3-3: Transmission Granted (step 6, Table 7.1.1.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK, EMERGENCY-CALL			
Information Element	Value/remark	Comment	Condition
User ID			
User ID	px_MCVideo_ID_User_B		

Table 7.1.1.4.3.3-4: Transmission Request (step 8, Table 7.1.1.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.1.1-1, condition OFF-NETWORK, EMERGENCY-CALL

Table 7.1.1.4.3.3-5: Transmission Rejected (step 9, Table 7.1.1.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.2-1, condition OFF-NETWORK, EMERGENCY-CALL

7.1.1.5 Off-network / Group Call / Imminent Peril Call / Client Originated (CO)

7.1.1.5.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
initiate/cancel imminent peril group calls in off-network environment, and the UE (MCVideo Client)
is in an off-network environment }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo imminent peril group call }
  then { UE (MCVideo Client) requests an MCPTT imminent peril group call by sending a GROUP CALL
ANNOUNCEMENT message, and respects the transmission control imposed by the transmission control
entity/arbitrator }
}

```

7.1.1.5.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in:

TS 24.281 clauses 9.3.2.4.2.1, 9.3.2.4.2.2, 9.3.2.4.3.1, TS 24.581 clauses 7.2.3.2.2, 7.2.3.5.2, 7.2.3.5.5. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.3.2.4.2.1]

When in the "S1: start-stop" state, upon an indication from an MCVideo user to initiate a group call for an MCVideo group ID, the MCVideo client:

- 1) shall store the MCVideo group ID as the MCVideo group ID of the call;

- 2) shall create a call type control state machine as described in clause 9.3.3.2;
- 3) shall generate a GROUP CALL PROBE message as specified in clause 17.1.2. In the GROUP CALL PROBE message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
- 4) shall send the GROUP CALL PROBE message as specified in clause 9.3.1.1.1;
- 5) shall start timer TFG3 (call probe retransmission);
- 6) shall start timer TFG1 (wait for call announcement); and
- 7) shall enter the "S2: waiting for call announcement" state.

[TS 24.281, clause 9.3.2.4.2.2]

When in the "S2: waiting for call announcement" state, upon expiration of TFG3 (call probe retransmission), the MCVideo client:

- 1) shall generate a GROUP CALL PROBE message as specified in clause 17.1.2. In the GROUP CALL PROBE message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
- 2) shall send the GROUP CALL PROBE message as specified in clause 9.3.1.1.1;
- 3) shall start timer TFG3 (call probe retransmission); and
- 4) shall remain in the "S2: waiting for call announcement" state.

[TS 24.281, clause 9.3.2.4.3.1]

When in the "S2: waiting for call announcement" state, upon expiry of timer TFG1 (wait for call announcement), the MCVideo client:

- 1) shall stop timer TFG3 (call probe retransmission), if running;
- 2) shall generate an SDP body as specified in clause 9.3.1.1.2 and store it as the SDP body of the call;
- 3) shall generate a random number with uniform distribution between 0 and 65535 and store it as the call identifier of the call;
- 4) shall select refresh interval value and store it as the refresh interval of the call;
- 5) shall store own MCVideo user ID as the originating MCVideo user ID of the call;
- 6) shall store the current UTC time as the call start time of the call;
- 7) shall generate a GROUP CALL ANNOUNCEMENT message as specified in clause 17.1.3. In the GROUP CALL ANNOUNCEMENT message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier of the call;
 - b) shall set the Call type IE to the stored current call type associated with the call type control state machine;
 - c) shall set the Refresh interval IE to the stored refresh interval of the call;
 - d) shall set the SDP IE to the stored SDP body of the call;
 - e) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call;
 - f) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
 - g) shall set the Call start time IE to the stored call start time of the call;
 - h) shall set the Last call type change time IE to the stored last call type change time of the call associated with call type control state machine;

- i) shall set the Last user to change call type IE to last user to change call type associated with call type control state machine; and
 - j) may include the Confirm mode indication IE;
- 8) shall send the GROUP CALL ANNOUNCEMENT message as specified in clause 9.3.1.1.1;
 - 9) shall establish a media session based on the stored SDP body of the call;
 - 10) shall start transmission control as originating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
 - 11) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;
 - 12) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and
 - 13) shall enter the "S3: part of ongoing call" state.

Note: In this release of the specification, the refresh interval of the call is fixed to 10 seconds.

[TS 24.581, clause 7.2.3.2.2]

When an MCVideo call is established with session announcement including an explicit transmission request, the originating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
2. shall send Transmission Granted message towards other transmission participants. The Transmission Granted message:
 - a. shall include the granted priority in the Transmission priority field;
 - b. shall include the MCVideo user's own MCVideo ID in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types; and
3. shall enter 'O: transmission arbitration' state.

[TS 24.581, clause 7.2.3.5.2]

Upon receiving encoded media from the user or if encoded media is already buffered the transmission participant:

1. shall start timer T206 (Stop talking warning);
2. shall request the MCVideo client to start sending RTP media packets towards other MCVideo clients; and
3. shall remain in 'O: transmission arbitration' state.

[TS 24.581, clause 7.2.3.5.5]

Upon receiving an indication from the MCVideo user to release permission to send RTP media and there is no transmitter in transmitter list, the transmission participant:

1. shall stop timer T206 (Stop talking warning), if running;
2. shall stop timer T207 (Stop talking), if running;
3. shall send a Transmission Arbitration Release message towards other transmission participants. The Transmission Arbitration Release message:
 - a. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - b. if the session is not initiated as a broadcast group call with the B-bit set to '1' (Broadcast group call), shall include a Transmission Indicator field set to '0' (normal call);
4. shall start timer T230 (Inactivity); and

5. shall enter 'O: silence' state.

7.1.1.5.3 Test description

7.1.1.5.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.1.1.5.3.2 Test procedure sequence

Table 7.1.1.5.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
4	Make the UE (MCVideo Client) initiate an off-network imminent peril group call with an explicit transmission request. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo off-network call establishment are described in TS 37.579-1 [2] clause 5.4.11 'MCX CO communication over ProSe direct one-to-many communication out of E-UTRA coverage / Monitoring/Discoverer procedure for group member discovery / One-to-many communication'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
5	Check: Does the UE (MCVideo Client) send a GROUP CALL PROBE message to determine the current call status of the group? (NOTE 2)	-->	GROUP CALL PROBE	1	P
-	EXCEPTION: Step 6 is executed a total of 3 times	-	-	-	-
6	Check: At the expiration of timer TFG3 (call probe retransmission), does the UE (MCVideo Client) send a retransmission of the GROUP CALL PROBE sent in step 5?	-->	GROUP CALL PROBE	1	P
7	Check: At the expiration of timer TFG1 (wait for call announcement), and after receiving no response to the GROUP CALL PROBE, does the UE (MCVideo Client) send a GROUP CALL ANNOUNCEMENT message to initiate an off-network imminent peril group call?	-->	GROUP CALL ANNOUNCEMENT	1	P
8	The SS-UE1 (MCVideo Client) sends a GROUP CALL ACCEPT accepting the GROUP CALL ANNOUNCEMENT.	<--	GROUP CALL ACCEPT	-	-
9	Check: Does the UE (MCVideo Client) send a Transmission Granted message towards the other transmission participants?	-->	Transmission Granted	1	P
10	Make the MCVideo User release transmission control. (NOTE 1), (NOTE 3)	-	-	-	-
11	Check: Does the UE (MCVideo Client) send a Transmission Arbitration Release message to the other transmission participants?	-->	Transmission Arbitration Release	1	P
12	Make the UE (MCVideo Client) release the imminent peril group call. (NOTE 1)	-	-	-	-

-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
<p>NOTE 1: This is expected to be done via a suitable implementation dependent MMI.</p> <p>NOTE 2: Timer TFG3 (call probe retransmission)=40ms as defined in TS 37.579-1 [2], Table 5.5.8.1-1 and TFG1 (wait for call announcement)=150ms as defined in TS 37.579-1 [2], Table 5.5.8.1-1 are started upon the sending of the GROUP CALL PROBE message</p> <p>NOTE 3: If the MCVideo User does not release transmission control before timer T207 (Stop talking) expires, then the MCVideo Client will enter the 'O: silence' state per TS 24.581 [27] and the remaining steps will not be valid. Timer T206 (Stop talking warning) is started upon the sending of the Transmission Granted message. Timer T207 (Stop talking) starts upon the expiration of Timer T206 (Stop talking warning). Default value of Timer T206 (Stop talking warning)=27s according to TS 24.581 [27]. Default value of T207 (Stop talking) is 3s according to TS 24.581 [27].</p>					

7.1.1.5.3.3 Specific message contents

Table 7.1.1.5.3.3-1: GROUP CALL ANNOUNCEMENT (step 7, Table 7.1.1.5.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.2-1, condition IMPERIL-CALL

Table 7.1.1.5.3.3-2: GROUP CALL ACCEPT (step 8, Table 7.1.1.5.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.3-1, condition IMPERIL-CALL			
Information Element	Value/remark	Comment	Condition
Sending MCVideo user ID	px_MCVideo_ID_User_B		

Table 7.1.1.5.3.3-3: Transmission Granted (step 9, Table 7.1.1.5.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK, IMPERIL-CALL

Table 7.1.1.5.3.3-4: Transmission Arbitration Release (step 11, Table 7.1.1.5.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.4-1, condition OFF-NETWORK, IMPERIL-CALL

7.1.1.6 Off-network / Group Call / Imminent Peril Call / Client Terminated (CT)

7.1.1.6.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
receive imminent peril group calls in off-network environment, and the UE (MCVideo Client) is in an
off-network environment }
ensure that {
  when { UE (MCVideo Client) receives a GROUP CALL ANNOUNCEMENT message for an imminent peril group
call with Confirm mode indication present }
  then { UE (MCVideo Client) sends a GROUP CALL ACCEPT message and respects the transmission
control imposed by the transmission control entity/arbitrator }
}
    
```

7.1.1.6.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 9.3.2.4.3.3, 9.3.3.4.5, TS 24.581 clauses 7.2.3.2.3, 7.2.3.3.4, 7.2.3.4.2, 7.2.3.7.3. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.3.2.4.3.3]

When in the "S1: start-stop" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE not matching MCVideo group ID of the call stored for other state machines, the MCVideo client:

- 1) shall store the value of the SDP IE of the GROUP CALL ANNOUNCEMENT message as the SDP body of the call;
- 2) shall store the value of the Call identifier IE of the GROUP CALL ANNOUNCEMENT message as the call identifier of the call;
- 3) shall store the value of the Originating MCVideo user ID IE of the GROUP CALL ANNOUNCEMENT message as the originating MCVideo user ID of the call;
- 4) shall store the value of the Refresh interval IE of the GROUP CALL ANNOUNCEMENT message as the refresh interval of the call;
- 5) shall store the value of the MCVideo group ID IE of the GROUP CALL ANNOUNCEMENT message as the MCVideo group ID of the call;
- 6) shall store the value of the Call start time IE of the GROUP CALL ANNOUNCEMENT message as the call start time of the call;
- 7) shall create a call type control state machine as described in clause 9.3.3.2;
- 8) if the terminating UE is configured that the terminating MCVideo user acknowledgement is required upon a terminating call request reception:
 - a) shall start timer TFG4 (waiting for the user);
 - b) if the GROUP CALL ANNOUNCEMENT message contains the Confirm mode indication IE, shall enter the "S5: pending user action with confirm indication" state; and
 - c) if the GROUP CALL ANNOUNCEMENT message does not contains the Confirm mode indication IE, shall enter the "S4: pending user action without confirm indication" state; and
- 9) if the terminating UE is configured that the terminating MCVideo user acknowledgement is not required upon a terminating call request reception:
 - a) shall establish a media session based on the stored SDP body of the call;
 - b) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
 - c) if the GROUP CALL ANNOUNCEMENT message contains the Confirm mode indication IE:
 - i) shall generate a GROUP CALL ACCEPT message as specified in clause 17.1.4. In the GROUP CALL ACCEPT message, the MCVideo client:
 - A) shall set the Call identifier IE to the stored call identifier of the call;
 - B) shall set the Sending MCVideo user ID IE to own MCVideo user id;
 - C) shall set the Call type IE to the stored current call type associated with the call type control state machine; and
 - D) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call; and
 - ii) shall send the GROUP CALL ACCEPT message as specified in clause 9.3.1.1.1;
 - d) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;

- e) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and
- f) shall enter the "S3: part of ongoing call" state.

[TS 24.281, clause 9.3.3.4.5]

When in the "T0: waiting for the call to establish" state, upon receipt of a GROUP CALL ANNOUNCEMENT message by an idle MCVideo client when MCVideo user acknowledgement is not required, the MCVideo client:

- 1) shall set the stored last call type change time to the Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;
- 2) shall set the last user to change call type to the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;
- 3) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL":
 - a) shall set the stored current call type to "EMERGENCY GROUP CALL";
 - b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];
 - c) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1; and
 - d) shall enter "T1: in-progress emergency group call" state;
- 4) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL":
 - a) shall set the stored current call type to "IMMINENT PERIL GROUP CALL";
 - b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];
 - c) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2; and
 - d) shall enter "T3: in-progress imminent peril group call" state; and
- 5) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "BASIC GROUP CALL":
 - a) shall set the stored current call type to "BASIC GROUP CALL";
 - b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4]; and
 - c) shall enter "T2: in-progress basic group call" state.

[TS 24.581, clause 7.2.3.2.3]

When an MCVideo call is established the terminating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
2. shall start timer T230 (Inactivity); and
3. shall enter 'O: silence' state.

[TS 24.581, clause 7.2.3.3.4]

When a Transmission Granted message is received and if the User ID in the Transmission Granted message does not match its own User ID, the transmission participant:

1. may provide a transmission taken notification to the MCVideo user;
2. if the Transmission Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating that this is a broadcast group call;

3. shall stop timer T230 (Inactivity);
4. shall start timer T203 (End of RTP media) and store the identity of the user, to whom the transmission was granted in the Transmission Granted message, in transmitter list; and
5. shall enter 'O: has no permission' state.

[TS 24.581, clause 7.2.3.4.2]

If the transmission participant receives an indication from the MCVideo user that the MCVideo user wants to send media, the transmission participant:

1. shall send the Transmission Request message to other clients. The Transmission Request message:
 - a. if a priority different than the default transmission priority is required, shall include the Transmission Priority field with the requested priority in the <Transmission Priority> element;
 - b. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall initialise the counter C201 (Transmission request) with value set to 1;
3. shall start timer T201 (Transmission Request); and
4. shall enter 'O: pending request' state.

[TS 24.581, clause 7.2.3.7.3]

Upon receiving Transmission Rejected message, if the <User ID> value in the User ID field matches its own MCVideo ID and User ID of transmission participant sending the Transmission Rejected message matches the stored User ID of current transmission arbitrator, the transmission participant:

Editor's Note: How a new participant obtains the identity of the transmission arbitrator is FFS.

1. shall stop the timer T201 (Transmission Request);
2. shall provide transmission deny notification to the user;
3. may display the transmission deny reason to the user using information in the Reject Cause field; and
4. shall enter 'O: has no permission' state.

Otherwise, if the <User ID> value in the User ID field matches its own MCVideo ID and there is no stored the current transmission arbitrator, the transmission participant:

1. shall stop the timer T201 (Transmission Request);
2. shall set the stored User ID of the current transmission arbitrator to the value in the User ID of transmission control server field as received in the Transmission Rejected message;
3. shall provide transmission deny notification to the user;
4. may display the transmission deny reason to the user using information in the Reject Cause field; and
5. shall enter 'O: has no permission' state.

7.1.1.6.3 Test description

7.1.1.6.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo client)

- For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.1.1.6.3.2 Test procedure sequence

Table 7.1.1.6.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE.	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.10 'MCX CT communication over ProSe direct one-to-many communication out of E-UTRA coverage / Announcing/Discoveree procedure for group member discovery'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
4	SS-UE1 (MCVideo client) sends a GROUP CALL ANNOUNCEMENT for an imminent peril group call.	<--	GROUP CALL ANNOUNCEMENT	-	-
5	Check: Does the UE (MCVideo Client) send a GROUP CALL ACCEPT message?	-->	GROUP CALL ACCEPT	1	P
6	SS-UE1 (MCVideo client) sends a Transmission Granted message notifying the recipients that it now has transmission control.	<--	Transmission Granted	-	-
7	Make the MCVideo User request to send media. (NOTE 1)	-	-	-	-
8	Check: Does the UE (MCVideo Client) send a Transmission Request message?	-->	Transmission Request	1	P
9	SS-UE1 (MCVideo client) sends a Floor Granted message notifying the recipients that it now has transmission control.	<--	Transmission Rejected	-	-
10	Check: Does the UE (MCVideo Client) provide transmission deny notification to the MCVideo User? (NOTE 1)	-	-	1	P
-	EXCEPTION: SS releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.7 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the SS'.	-	-	-	-

NOTE 1: This is expected to be done via a suitable implementation dependent MMI.

7.1.1.6.3.3 Specific message contents

Table 7.1.1.6.3.3-1: GROUP CALL ANNOUNCEMENT (step 4, Table 7.1.1.6.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.2-1, condition IMPERIL-CALL			
Information Element	Value/remark	Comment	Condition
SDP	As described in TS37.579-1 [2], Table 5.5.3.1.4-2		
Originating MCPTT user ID	px_MCVideo_ID_User_B		

Table 7.1.1.6.3.3-1: GROUP CALL ACCEPT (step 5, Table 7.1.1.6.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.3-1, condition IMPERIL-CALL
--

Table 7.1.1.6.3.3-2: Transmission Granted (step 6, Table 7.1.1.6.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK, IMPERIL-CALL			
Information Element	Value/remark	Comment	Condition
User ID			
User ID	px_MCVideo_ID_User_B		

Table 7.1.1.6.3.3-3: Transmission Request (step 8, Table 7.1.1.6.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.1.1-1, condition OFF-NETWORK, IMPERIL-CALL

Table 7.1.1.6.3.3-4: Transmission Rejected (step 9, Table 7.1.1.6.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.2-1, condition OFF-NETWORK, IMPERIL-CALL

7.1.2 Broadcast Group Calls

7.1.2.1 Off-network / Group Call / Broadcast Group Call / Broadcast Group Call Retransmitting / Broadcast Group Call Release / Client Originated (CO)

7.1.2.1.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
initiate broadcast calls in off-network environment, and the UE (MCVideo Client) is in an off-
network environment }
ensure that {
  when { the MCVideo User requests to initiate an MCVideo broadcast call }
  then { UE (MCVideo Client) sends a GROUP CALL BROADCAST message and enters the "B2: in-progress
broadcast group call" state }
}

```

(2)

```

with { UE (MCVideo Client) in the "B2: in-progress broadcast group call" state, and the UE (MCVideo
Client) is in an off-network environment }
ensure that {
  when { the timer TFB2 (broadcast retransmission) expires }
  then { UE (MCVideo Client) retransmits the GROUP CALL BROADCAST message }
}

```

(3)

```

with { UE (MCVideo Client) in the "B2: in-progress broadcast group call" state, and the UE (MCVideo Client) is in an off-network environment }
ensure that {
  when { the MCVideo User requests to end the MCVideo broadcast call }
  then { UE (MCVideo Client) sends a GROUP CALL BROADCAST END message and enters the "B1: start-stop" state }
}

```

7.1.2.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 9.4.2.4.1, 9.4.2.4.9, 9.4.2.4.7, 9.4.2.4.11, TS 24.581 clause 7.2.3.2.2. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.4.2.4.1]

When in the "B1: start-stop" state, upon the indication from MCVideo user to initiate the broadcast group call, the MCVideo client:

- 1) shall generate an SDP body as specified in clause 9.3.1.1.2 and store it as the SDP body of the call;
- 2) shall generate a random number with uniform distribution between 0 and 65535 and store it as the call identifier of the call;
- 3) shall store own MCVideo user ID as the originating MCVideo user ID of the call;
- 4) shall store "BROADCAST GROUP CALL" as the current call type;
- 5) shall generate a GROUP CALL BROADCAST message as specified in clause 17.1.18. In the GROUP CALL BROADCAST message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier of the call;
 - b) shall set the Call type IE to the stored current call type;
 - c) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call;
 - d) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call; and
 - e) shall set the SDP IE to the stored SDP body of the call;
- 6) shall set the ProSe per-packet priority to the value corresponding to MCVideo off-network broadcast call as described in 3GPP TS 24.483 [4];
- 7) shall start transmission control as originating transmission participant as described specified in clause a.b in 3GPP TS 24.581 [5];
- 8) shall send the GROUP CALL BROADCAST message as specified in clause 9.3.1.1.1;
- 9) shall establish a media session based on the stored SDP body of the call;
- 10) shall start timer TFB2 (broadcast retransmission); and
- 11) shall enter the "B2: in-progress broadcast group call" state.

[TS 24.281, clause 9.4.2.4.9]

When in the "B2: in-progress broadcast group call" state, upon expiry of timer TFB2 (broadcast retransmission), the MCVideo client:

- 1) shall generate a GROUP CALL BROADCAST message as specified in clause 17.1.18. In the GROUP CALL BROADCAST message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier of the call;
 - b) shall set the Call type IE to the stored current call type;

- c) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call;
 - d) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call; and
 - e) shall set the SDP IE to the stored SDP body of the call;
- 2) shall send the GROUP CALL BROADCAST message as specified in clause 9.3.1.1.1;
 - 3) shall restart timer TFB2 (broadcast retransmission); and
 - 4) shall remain in the "B2: in-progress broadcast group call" state.

[TS 24.281, clause 9.4.2.4.7]

When in the "B2: in-progress broadcast group call" state, upon an indication from the originating MCVideo user to release the in-progress broadcast group call, the MCVideo client:

- 1) shall release the media session;
- 2) shall generate a GROUP CALL BROADCAST END message as specified in clause 17.1.19. In the GROUP CALL BROADCAST END message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier of the call;
 - b) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call; and
 - c) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
- 3) shall send the GROUP CALL BROADCAST END message as specified in clause 9.3.1.1.1;
- 4) shall stop timer TFB2 (broadcast retransmission);
- 5) shall stop transmission control; and
- 6) shall enter the "B1: start-stop" state.

[TS 24.281, clause 9.4.2.4.7]

When in the "B2: in-progress broadcast group call" state or "B4: ignoring same call ID" state, upon expiry of timer TFB1 (max duration) the MCVideo client:

- 1) shall release the media session;
- 2) shall clear the stored call identifier;
- 3) shall stop transmission control, if running; and
- 4) shall enter the "B1: start-stop" state.

[TS 24.581, clause 7.2.3.2.2]

When an MCVideo call is established with session announcement including an explicit transmission request, the originating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
2. shall send Transmission Granted message towards other transmission participants. The Transmission Granted message:
 - a. shall include the granted priority in the Transmission priority field;
 - b. shall include the MCVideo user's own MCVideo ID in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types; and
3. shall enter 'O: transmission arbitration' state.

7.1.2.1.3 Test description

7.1.2.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.1.2.1.3.2 Test procedure sequence

Table 7.1.2.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
4	Make the UE (MCVideo Client) initiate an off-network broadcast call (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo off-network call establishment are described in TS 37.579-1 [2] clause 5.4.11 'MCX CO communication over ProSe direct one-to-many communication out of E-UTRA coverage / Monitoring/Discoverer procedure for group member discovery / One-to-many communication'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
5	Check: Does the UE (MCVideo client) send a GROUP CALL BROADCAST message? (NOTE 2)	-->	GROUP CALL BROADCAST	1	P
6	SS starts Timer=10s (Timer TFB2 (broadcast retransmission))	-	-	-	-
7	Check: Does the UE (MCVideo Client) send a Transmission Granted message towards the other transmission participants?	-->	Transmission Granted	1	P
8	Timer=10s expires	-	-	-	-
9	Check: Does the UE (MCVideo client) send a GROUP CALL BROADCAST message using the same Call identifier IE as used in step 4?	-->	GROUP CALL BROADCAST	2	P
10	Make the UE (MCVideo Client) cancel the broadcast call (NOTE 1), (NOTE 3)	-	-	-	-
11	Check: Does the UE (MCVideo client) send a GROUP CALL BROADCAST END message and enter the "B1: start-stop" state? (NOTE 4)	-->	GROUP CALL BROADCAST END	3	P
-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
<p>NOTE 1: This is expected to be done via a suitable implementation dependent MMI.</p> <p>NOTE 2: Timer TFB2 (broadcast retransmission) is started by the MCVideo Client upon the sending of the GROUP CALL BROADCAST message. Timer TFB2 (broadcast retransmission)=10s, as defined in TS 37.579-1 [2], Table 5.5.8.1-1. At the expire of timer TFB2 (broadcast retransmission), the MCVideo Client resends the GROUP CALL BROADCAST message.</p> <p>NOTE 3: If the MCVideo User does not cancel the broadcast call before timer TFB2 (broadcast retransmission) expires, then the MCVideo Client will resend the GROUP CALL BROADCAST message per TS 24.379 [9] and the remaining steps will not be valid. If during test execution it is found that the specified timer value is not large enough, then a new value needs to be specified.</p> <p>NOTE 4: Timer TFB2 (broadcast retransmission) is stopped by the MCVideo Client upon the sending of the GROUP CALL BROADCAST END message.</p>					

7.1.2.1.3.3 Specific message contents

Table 7.1.2.1.3.3-1: Transmission Granted (step 7, Table 7.1.2.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK			
Information Element	Value/remark	Comment	Condition
Transmission Indicator	"0100000000000000"	Broadcast group call	

Table 7.1.2.1.3.3-2: GROUP CALL BROADCAST (step 9, Table 7.1.2.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.5.6.1-1			
Information Element	Value/remark	Comment	Condition
Call identifier	Use the same Call identifier as used in the GROUP CALL BROADCAST message sent in step 5		

Table 7.1.2.1.3.3-3: GROUP CALL BROADCAST END (step 11, Table 7.1.2.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.5.6.1-1			
Information Element	Value/remark	Comment	Condition
Call identifier	Use the same Call identifier as used in the GROUP CALL BROADCAST message sent in step 5		

7.1.2.2 Off-network / Group Call / Broadcast Group Call / Originator Releases Call / Client Terminated (CT)

7.1.2.2.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
receive broadcast calls in off-network environment, and the UE (MCVideo Client) is in an off-network
environment, and the UE (MCVideo Client) has received a GROUP CALL BROADCAST message }
ensure that {
  when { UE (MCVideo Client) receives a Transmission Granted message with the Transmission Indicator
field included and with the B-bit set to '1' (Broadcast group call) }
  then { UE (MCVideo Client) provides a notification to the MCVideo User indicating that this is a
broadcast group call }
}

```

(2)

```

with { UE (MCVideo Client) in an ongoing off-network broadcast group call }
ensure that {
  when { MCVideo User requests to send media }
  then { UE (MCVideo Client) does not send a Transmission Request message }
}

```

7.1.2.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 9.4.2.4.2, 9.4.2.4.3, 9.4.2.4.8, TS 24.581 clauses 7.2.3.2.9, 7.2.3.4.6. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 9.4.2.4.2]

When in the "B1: start-stop" state, upon receiving a GROUP CALL BROADCAST message with the Call identifier IE not matching any in-progress broadcast group call, the MCVideo client:

- 1) shall store the value of the Call identifier IE of the GROUP CALL BROADCAST message as the call identifier of the call;
- 2) shall store the value of the Call type IE of the GROUP CALL BROADCAST message as the received current call type;
- 3) shall store the value of the SDP IE of the GROUP CALL BROADCAST message as the SDP body of the call;
- 4) shall store the value of the Originating MCVideo user ID IE of the GROUP CALL BROADCAST message as the originating MCVideo user ID of the call;
- 5) shall store the value of the MCVideo group ID IE of the GROUP CALL BROADCAST message as the MCVideo group ID of the call;
- 6) if the terminating UE is configured that the terminating MCVideo user acknowledgement is required upon a terminating call request reception:
 - i) shall start timer TFB3 (waiting for the user); and
 - ii) shall enter the "B3: pending user action" state; and
- 7) if the terminating UE is configured that the terminating MCVideo user acknowledgement is not required upon a terminating call request reception:
 - i) shall establish a media session based on the stored SDP body of the call;
 - ii) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
 - iii) shall start timer TFB1 (max duration); and
 - iv) shall enter the "B2: in-progress broadcast group call" state.

[TS 24.281, clause 9.4.2.4.3]

When in the "B3: pending user action" state, upon indication from the MCVideo user to accept the incoming broadcast group call, the MCVideo client:

- 1) shall establish a media session based on the stored SDP body of the call;
- 2) shall start transmission control as terminating transmission participant as described specified in clause a.b in 3GPP TS 24.581 [5];
- 3) shall stop timer TFB3 (waiting for the user);
- 4) shall start timer TFB1 (max duration); and
- 5) shall enter the "B2: in-progress broadcast group call" state.

[TS 24.281, clause 9.4.2.4.8]

When in the "B2: in-progress broadcast group call" state or "B4: ignoring same call ID" state, upon receiving GROUP CALL BROADCAST END message with the same Call identifier IE as the stored call identifier, the MCVideo client:

- 1) shall release media session;
- 2) shall stop transmission control, if running; and
- 3) shall enter the "B1: start-stop" state.

[TS 24.581, clause 7.2.3.2.9]

When an MCVideo broadcast call is established the terminating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;

2. shall start timer T203 (End of RTP media); and
3. shall enter 'O: has no permission' state.

NOTE: In MCVideo broadcast call, only originating MCVideo user is allowed to request transmission and transmit media. A Transmission Request message is locally denied to terminating MCVideo user, if requested.

[TS 24.581, clause 7.2.3.4.6]

When a Transmission Granted message is received and if the <User ID> value in the User ID field does not match its own MCVideo ID, the transmission participant:

1. shall start timer T203 (End of RTP media) for the User ID;
2. shall store the user to whom the transmission was granted in the Transmission Granted message in transmitter list;
3. may provide a transmission taken notification to the MCVideo user;
4. if the Transmission Indicator field is included with the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating that this is a broadcast group call; and
5. shall remain in the 'O: has no permission' state.

7.1.2.2.3 Test description

7.1.2.2.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.1.2.2.3.2

Test procedure sequence

Table 7.1.2.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.10 'MCX CT communication over ProSe direct one-to-many communication out of E-UTRA coverage / Announcing/Discoveree procedure for group member discovery'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
4	SS-UE1 (MCVideo Client) sends a GROUP CALL BROADCAST (NOTE 2)	<--	GROUP CALL BROADCAST	-	-
-	EXCEPTION: Step 5a1- describes behaviour that depends on the UE configuration; the "lower case letter" identifies a step sequence that take place if the UE is configured that the terminating MCVideo user acknowledgement is required upon a terminating call request reception.	-	-	-	-
5a1	Make the MCVideo User accept the terminating call.	-	-	-	-
6	SS-UE1 (MCVideo Client) sends a Transmission Granted message.	<--	Transmission Granted	-	-
7	Check: Does the UE (MCVideo Client) provide a notification to the MCVideo User indicating that this is a broadcast group call?	-	-	1	P
8	Make the UE (MCVideo User) request to send media. (NOTE 1), (NOTE 3)	-	-	-	-
9	Check: Does the UE (MCVideo Client) send in the next 5 seconds a Transmission Request message to the transmission participants?	-->	Transmission Request	2	F
10	Wait 5 seconds for the Transmission Request message	-	-	-	-
11	SS-UE1 (MCVideo Client) sends a GROUP CALL BROADCAST END (NOTE 4)	<--	GROUP CALL BROADCAST END	-	-
-	EXCEPTION: SS releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.7 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the SS'.	-	-	-	-
<p>NOTE 1: This is expected to be done via a suitable implementation dependent MMI.</p> <p>NOTE 2: Timer TFB1 (max duration) is started by the MCVideo Client upon the receiving of the GROUP CALL BROADCAST message. Timer TFB1 (max duration)=300s, as defined in TS 37.579-1 [2], Table 5.5.8.1-1. At the expire of TFB1 (max duration), the MCVideo Client will terminate participation in the broadcast call.</p> <p>NOTE 3: It is possible that the MCVideo Client may not allow the MCVideo User to request the floor.</p> <p>NOTE 4: Timer TFB1 (max duration) is stopped by the MCVideo Client upon the receiving of the GROUP CALL BROADCAST END message.</p>					

7.1.2.2.3.3 Specific message contents

Table 7.1.2.2.3.3-1: GROUP CALL BROADCAST (step 4, Table 7.1.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.6-1			
Information Element	Value/remark	Comment	Condition
Originating MCVideo user ID	px_MCVideo_ID_User_B		
SDP	As described in TS 37.579-1 [2], Table 5.5.3.1.4-2		

Table 7.1.2.2.3.3-2: Transmission Granted (step 6, Table 7.1.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK			
Information Element	Value/remark	Comment	Condition
User ID			
User ID	px_MCVideo_ID_User_B		
Transmission Indicator			
Transmission Indicator	"0100000000000000"	Broadcast group call	

Table 7.1.2.2.3.3-3: GROUP CALL BROADCAST End (step 11, Table 7.1.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.7.1-1			
Information Element	Value/remark	Comment	Condition
Originating MCVideo user ID	px_MCVideo_ID_User_B		

7.2 Private Calls

7.2.1 Off-network / Private Call / Automatic Commencement Mode / No response to private call setup request / Private call setup request accepted / Release call / Client Originated (CO)

7.2.1.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with automatic commencement in off-network environment, and, the UE is
in an off-network environment }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo private call with Automatic
Commencement Mode }
  then { UE (MCVideo Client) sends a PRIVATE CALL SETUP REQUEST message requesting establishment
of a private call with Automatic Commencement Mode }
}

```

(2)

```

with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with automatic commencement in off-network environment, and, the UE is
in an off-network environment, and, UE (MCVideo Client) having sent a PRIVATE CALL SETUP REQUEST
message requesting establishment of a private call }
ensure that {
  when { the UE (MCVideo Client) does not receive response to the request until the timer TFPl
(private call request retransmission) expires }
  then { UE (MCVideo Client) retransmits the PRIVATE CALL SETUP REQUEST message requesting private
call if the counter CFP1 (private call request retransmission) has not reached its max value and

```

```

increments the counter CFP1 with one, and, stops re-transmitting if the counter CFP1 (private call
request retransmission) has reached its max value and TFP1 (private call request retransmission) has
expired, and, ignores a PRIVATE CALL ACCEPT message if received after the counter CFP1 (private call
request retransmission) has reached its max value and TFP1 (private call request retransmission) has
expired }
}

```

(3)

```

with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with automatic commencement in off-network environment, and, the UE is
in an off-network environment, and, UE (MCVideo Client) having sent a PRIVATE CALL SETUP REQUEST
message requesting establishment of a private call }
ensure that {
  when { the UE (MCVideo Client) receives a PRIVATE CALL ACCEPT message }
  then { UE (MCVideo Client) responds with a PRIVATE CALL ACCEPT ACK message and, respects the
transmission control imposed by the transmission control entity/arbitrator }
}

```

(4)

```

with { UE (MCVideo Client) having an ongoing private call }
ensure that {
  when { the MCVideo User requests to end the private call }
  then { UE (MCVideo Client) sends a PRIVATE CALL RELEASE message, and, responds to a PRIVATE CALL
RELEASE ACK message by starting timer TFP7 (waiting for any message with same call identifier) }
}

```

7.2.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in:

TS 24.281 clauses 10.3.2.4.2.1, 10.3.2.4.2.2, 10.3.2.4.2.4, 10.3.2.4.5.7, 10.3.2.4.2.8, 10.3.2.4.5.1, 10.3.2.4.5.5, TS 24.581 clauses 7.2.3.2.2, 7.2.3.5.5. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 10.3.2.4.2.1]

When in the "P0: start-stop" state or "P1: ignoring same call id", upon an indication from MCVideo User to initiate a private call and the value of "`<x>/<x>/Common/PrivateCall/Authorised`" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", the MCVideo client:

- 1) shall generate and store the call identifier as a random number uniformly distributed between (0, 65536);
- 2) shall store own MCVideo user ID as caller ID;
- 3) shall store MCVideo user ID of the callee as callee ID;
- 4) shall store "AUTOMATIC COMMENCEMENT MODE" as commencement mode, if requested and the value of "`<x>/<x>/Common/PrivateCall/AutoCommence`" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true". Otherwise if the value of "`<x>/<x>/Common/PrivateCall/ManualCommence`" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", store "MANUAL COMMENCEMENT MODE" as commencement mode;
- 5) shall store "PRIVATE CALL" as the current call type;;
- 6) if an end-to-end security context needs to be established then:
 - a) shall use keying material provided by the key management server to generate a PCK as described in 3GPP TS 33.180 [8];
 - b) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - c) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID of the invited user and a time related parameter as described in 3GPP TS 33.180 [8];
 - d) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8];

- e) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8] and;
 - g) shall store the MIKEY-SAKKE I_MESSAGE for later inclusion in an SDP body;
- 7) may store current user location as user location;
- 8) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network private call as described in 3GPP TS 24.483 [4].
- 9) shall generate and store offer SDP, as defined in clause 10.3.1.1.2;
- 10) shall generate a PRIVATE CALL SETUP REQUEST message as specified in clause 17.1.5. In the PRIVATE CALL SETUP REQUEST message, the MCVideo client:
- a) shall set the Call identifier IE with the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with the stored caller ID;
 - c) shall set the MCVideo user ID of the callee IE with the stored callee ID;
 - d) shall set the Commencement mode IE with the stored commencement mode;
 - e) shall set the Call type IE with the stored current call type;
 - f) shall set the SDP offer IE with the stored offer SDP; and
 - g) may set the User location IE with the stored user location.
- 11) shall send the PRIVATE CALL SETUP REQUEST message towards other MCVideo client according to rules and procedures as specified in clause 10.3.1.1.1;
- 12) shall initialize the counter CFP1 (private call request retransmission) with the value set to 1;
- 13) shall start timer TFP1 (private call request retransmission); and
- 14) shall enter the "P2: waiting for call response" state.

[TS 24.281, clause 10.3.2.4.2.2]

When in the "P2: waiting for call response" state, upon expiry of timer TFP1 (private call request retransmission), the MCVideo client:

- 1) may update the stored user location with current user location;
- 2) shall increment the value of counter CFP1 (private call request retransmission) by 1;
- 3) shall generate a PRIVATE CALL SETUP REQUEST message as specified in clause 17.1.5. In the PRIVATE CALL SETUP REQUEST message, the MCVideo client:
 - a) shall set the Call identifier IE with the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with the stored caller ID;
 - c) shall set the MCVideo user ID of the callee IE with the stored callee ID;
 - d) shall set the Commencement mode IE with the stored commencement mode;
 - e) shall set the Call type IE with the stored current call type;
 - f) shall set the SDP offer IE with the stored offer SDP; and
 - g) may set the User location IE with stored user location.

- 4) shall send the PRIVATE CALL SETUP REQUEST message towards other MCVideo client according to rules and procedures as specified in clause 10.3.1.1.1;
- 5) shall start timer TFP1 (private call request retransmission); and
- 6) shall remain in the "P2: waiting for call response" state.

[TS 24.281, clause 10.3.2.4.2.4]

In the "P2: waiting for call response" state, when timer TFP1 (private call request retransmission) expires and the value of the counter CFP1 (private call request retransmission) is equal to the upper limit and the stored commencement mode is "AUTOMATIC COMMENCEMENT MODE", the MCVideo client:

- 1) shall start timer TFP7 (waiting for any message with same call identifier); and
- 2) shall enter the "P1: ignoring same call id" state.

[TS 24.281, clause 10.3.2.4.5.7]

When in the "P1: ignoring same call id" state, upon expiry of timer TFP7 (waiting for any message with same call identifier) the MCVideo client:

- 1) shall clear the stored call identifier; and
- 2) shall enter the "P0: start-stop" state.

[TS 24.281, clause 10.3.2.4.2.8]

When in the "P2: waiting for call response" state, upon receiving a PRIVATE CALL ACCEPT message response to PRIVATE CALL SETUP REQUEST message with the same call identifier, the MCVideo client:

- 1) shall store the SDP answer IE received in the PRIVATE CALL ACCEPT message as answer SDP;
- 2) shall generate a PRIVATE CALL ACCEPT ACK message as specified in clause 17.1.11:
 - a) shall set the Call identifier IE to the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with the stored caller ID; and
 - c) shall set the MCVideo user ID of the callee IE with the stored callee ID.
- 3) shall send the PRIVATE CALL ACCEPT ACK message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
- 4) shall stop timer TFP1 (call setup retransmission), if running;
- 5) shall stop timer TFP2 (waiting for call response message), if running;
- 6) shall establish a media session based on the SDP body of the stored answer SDP;
- 7) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
- 8) shall start timer TFP5 (max duration); and
- 9) shall enter the "P4: part of ongoing call" state.

[TS 24.281, clause 10.3.2.4.5.1]

When in the "P4: part of ongoing call" state, upon an indication from MCVideo User to release a private call, the MCVideo client:

- 1) shall generate a PRIVATE CALL RELEASE message as specified in clause 17.1.9. In the PRIVATE CALL RELEASE message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with stored caller ID; and

- c) shall set the MCVideo user ID of the callee IE with stored callee ID.
- 2) shall send the PRIVATE CALL RELEASE message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
- 3) shall initialize the counter CFP3 (private call release retransmission) with the value set to 1;
- 4) shall start timer TFP3 (private call release retransmission); and
- 5) shall enter the "P3: waiting for release response" state.

[TS 24.281, clause 10.3.2.4.5.5]

When in the "P3: waiting for release response" state, upon receiving a PRIVATE CALL RELEASE ACK to PRIVATE CALL RELEASE message, the MCVideo client:

- 1) shall stop timer TFP3 (private call release retransmission), if running;
- 2) shall terminate the media session;
- 3) shall start timer TFP7 (waiting for any message with same call identifier); and
- 4) shall enter the "P1: ignoring same call id" state.

[TS 24.581, clause 7.2.3.2.2]

When an MCVideo call is established with session announcement including an explicit transmission request, the originating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
2. shall send Transmission Granted message towards other transmission participants. The Transmission Granted message:
 - a. shall include the granted priority in the Transmission priority field;
 - b. shall include the MCVideo user's own MCVideo ID in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types; and
3. shall enter 'O: transmission arbitration' state.

[TS 24.581, clause 7.2.3.5.5]

Upon receiving an indication from the MCVideo user to release permission to send RTP media and there is no transmitter in transmitter list, the transmission participant:

1. shall stop timer T206 (Stop talking warning), if running;
2. shall stop timer T207 (Stop talking), if running;
3. shall send a Transmission Arbitration Release message towards other transmission participants. The Transmission Arbitration Release message:
 - a. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - b. if the session is not initiated as a broadcast group call with the B-bit set to '1' (Broadcast group call), shall include a Transmission Indicator field set to '0' (normal call);
4. shall start timer T230 (Inactivity); and
5. shall enter 'O: silence' state.

7.2.1.3 Test description

7.2.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.2.1.3.2

Test procedure sequence

Table 7.2.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE.	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
4	Make the MCVideo User request the establishment of an MCVideo private call with Automatic Commencement Mode, and with Transmission Control. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.5 'MCX CO communication over ProSe direct one-to-one communication out of E-UTRA coverage-establishment'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
-	EXCEPTION: Steps 5-7 are repeated CFP1=3 times (CFP1 defined in 37.579-1 [2] Table 5.5.8.1-1)	-	-	-	-
5	Check: Does the UE (MCVideo Client) send a PRIVATE CALL SETUP REQUEST message? NOTE: It is expected that the UE - shall initialize the counter CFP1 (private call request retransmission) with the value set to 1 on the first transmission, and, increase it by 1 with each re-transmission. - shall start timer TFP1 (private call request retransmission)	-->	PRIVATE CALL SETUP REQUEST	1,2	P
6	Start TFP1 (private call request retransmission) 2000 milliseconds as defined in 37.579-1 [2] Table 5.5.8.1-1.	-	-	-	-
7	TFP1 expires.	-	-	-	-
8	Start TFP7 (waiting for any message with same call identifier) 6 sec (value chosen to facilitate the test sequence in steps 14-16) and defined in 37.579-1 [2] Table 5.5.8.1-1. NOTE: TFP7 is expected to be started after TFP1 expires and CFP1 is equal to the upper limit. NOTE: It is expected that the UE considers at this moment of time the Private call establishment attempt as failed.	-	-	-	-
9	SS-UE1 (MCVideo Client) sends a PRIVATE CALL ACCEPT message,	<--	PRIVATE CALL ACCEPT	-	-
-	EXCEPTION: Steps 10a1-10b1 depend on UE compliance; the "lower case letter" identifies a step sequence that takes place depending on UE behaviour.	-	-	-	-
10a1	Check: Does the UE (MCVideo Client) send a PRIVATE CALL ACCEPT ACK?	-->	PRIVATE CALL ACCEPT ACK	2	F
10b1	Check: Does the TFP7 (waiting for any message with same call identifier) expire?	-	-	2	P

-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
11	Make the MCVideo User request the establishment of an MCVideo private call with Automatic Commencement Mode, and with Transmission Control. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.5 'MCX CO communication over ProSe direct one-to-one communication out of E-UTRA coverage-establishment'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
12	Check: Does the UE (MCVideo Client) send a PRIVATE CALL SETUP REQUEST message? NOTE: It is expected that the UE - shall initialize the counter CFP1 (private call request retransmission) with the value set to 1 on the first transmission, and, increase it by 1 with each re-transmission. - shall start timer TFP1 (private call request retransmission)	-->	PRIVATE CALL SETUP REQUEST	1	P
13	SS-UE1 (MCVideo Client) sends a PRIVATE CALL ACCEPT message.	<--	PRIVATE CALL ACCEPT	-	-
14	Check: Does the UE (MCVideo Client) send a PRIVATE CALL ACCEPT ACK message? NOTE: It is expected that the UE - shall stop timer TFP1 (call setup retransmission), if running - shall stop timer TFP2 (waiting for call response message), if running - shall start timer TFP5 (max duration)	-->	PRIVATE CALL ACCEPT ACK	3	P
15	Check: Does the UE (MCVideo Client) send a Transmission Granted message towards the other transmission participant?	-->	Transmission Granted	3	P
16	Make the MCVideo User release transmission control. (NOTE 1)	-	-	-	-
17	Check: Does the UE (MCVideo Client) send a Transmission Release message to the other transmission participants?	-->	Transmission Arbitration Release	3	P
18	Make the UE (MCVideo Client) release the private call. (NOTE 1)	-	-	-	-
19	Check: Does the UE (MCVideo Client) send a PRIVATE CALL RELEASE message towards the other transmission participant?	-->	PRIVATE CALL RELEASE	4	P
20	SS-UE1 (MCVideo Client) sends a PRIVATE CALL RELEASE ACK message. NOTE: It is expected that the UE shall start TFP7 (waiting for any message with same call identifier) upon reception of the PRIVATE CALL RELEASE ACK message.	<--	PRIVATE CALL RELEASE ACK	-	-
21	Check: Does the TFP7 (waiting for any message with same call identifier) expire?	-	-	4	P

-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

7.2.1.3.3 Specific message contents

Table 7.2.1.3.3-1: Transmission Granted (step 15, Table 7.2.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK

Table 7.2.1.3.3-2: Transmission Arbitration Release (step 17, Table 7.2.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.4-1, condition OFF-NETWORK

7.2.2 Off-network / Private Call / Automatic Commencement Mode / Client Terminated (CT)

7.2.2.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with automatic commencement in off-network environment, and, the UE is
in an off-network environment }
ensure that {
  when { the UE (MCVideo Client) receives a request for establishment of an MCVideo private call
with Automatic Commencement Mode via a PRIVATE CALL SETUP REQUEST message }
  then { UE (MCVideo Client) sends a PRIVATE CALL ACCEPT message accepting the establishment of a
private call on-demand Automatic Commencement Mode, and, respects the transmission control imposed
by the transmission control entity/arbitrator }
}
```

(2)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with automatic commencement in off-network environment, and, the UE is
in an off-network environment, and, UE (MCVideo Client) having sent a PRIVATE CALL SETUP REQUEST
message requesting establishment of a private call }
ensure that {
  when { the UE (MCVideo Client) does not receive response to the request until the timer TFPl
(private call request retransmission) expires }
  then { UE (MCVideo Client) retransmits the PRIVATE CALL SETUP REQUEST message requesting private
call if the counter CFP1 (private call request retransmission) has not reached its max value and
increments the counter CFP1 with one, and, stops re-transmitting if the counter CFP1 (private call
request retransmission) has reached its max value and TFPl (private call request retransmission) has
expired, and, ignores a PRIVATE CALL ACCEPT message if received after the counter CFP1 (private call
request retransmission) has reached its max value and TFPl (private call request retransmission) has
expired }
}
```

(3)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with automatic commencement in off-network environment, and, the UE is
in an off-network environment, and, UE (MCVideo Client) having sent a PRIVATE CALL SETUP REQUEST
message requesting establishment of a private call }
ensure that {
  when { the UE (MCVideo Client) receives a PRIVATE CALL ACCEPT message }
}
```

then { UE (MCVideo Client) responds with a PRIVATE CALL ACCEPT ACK message **and**, respects the transmission control imposed by the transmission control entity/arbitrator }

(4)

with { UE (MCVideo Client) having an ongoing private call }
ensure that {
 when { the MCVideo User receives a PRIVATE CALL RELEASE message to end the private call }
 then { UE (MCVideo Client) sends a PRIVATE CALL RELEASE ACK message }
 }

7.2.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in:

TS 24.281 clauses 10.3.2.4.3.2, 10.3.2.4.3.4, 10.3.2.4.5.4, 10.3.2.4.5.7, TS 24.581 clauses 7.2.3.2.4, 7.2.3.4.2, 7.2.3.7.8, 7.2.3.6.4. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 10.3.2.4.3.2]

When in the "P0: start-stop" or "P1: ignoring same call id" state, upon receiving a PRIVATE CALL SETUP REQUEST message with Commencement mode IE set to "AUTOMATIC COMMENCEMENT MODE" and Call identifier IE different than stored call identifier and media session declared in SDP body of PRIVATE CALL SETUP REQUEST message can be established, the MCVideo client:

- 1) shall store the Call identifier IE in the received message as call identifier;
- 2) shall set the stored current call type to "PRIVATE CALL";
- 3) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network private call as described in 3GPP TS 24.483 [4].
- 4) shall store the MCVideo user ID of the caller IE in the received PRIVATE CALL SETUP REQUEST message as caller ID;
- 5) shall store own MCVideo user ID as callee ID;
- 6) if the SDP offer contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo user from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if the validation of the signature failed, shall generate a PRIVATE CALL REJECT message as specified in clause 17.1.8. In the PRIVATE CALL REJECT message, the MCVideo client:
 - i) shall set the call identifier IE to the stored call identifier;
 - ii) shall set the MCVideo user ID of the caller IE with the stored caller ID;
 - iii) shall set the MCVideo user ID of the callee IE with the stored callee ID;
 - iv) shall set the Reason IE as "FAILED", if requested to restrict notification of call failure and the value of "/<x>/<x>/Common/PrivateCall/FailRestrict" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true". Otherwise, shall set the reason IE as "E2E SECURITY CONTEXT FAILURE";
 - v) shall send the PRIVATE CALL REJECT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1; and
 - vi) shall remain in the current state;

- e) if the validation of the signature was successful:
- i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8];
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];
 - iii) shall generate and store answer SDP based on received SDP offer IE in PRIVATE CALL SETUP REQUEST message, as defined in clause 10.3.1.1.2;
 - iv) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7. In the PRIVATE CALL ACCEPT message, the MCVideo client:
 - A) shall set the Call identifier IE to the stored call identifier; and
 - B) shall set the MCVideo user ID of the caller IE with stored caller ID.
 - C) shall set the MCVideo user ID of the callee IE with stored callee ID; and
 - D) shall set the SDP answer IE with the stored answer SDP;
 - v) shall send PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
 - vi) shall establish a media session based on the SDP body of the stored answer SDP;
 - vii) shall initialize the counter CFP4 with value set to 1;
 - viii) shall start timer TFP4 (private call accept retransmission); and
 - ix) shall enter the "P5: pending" state; and

NOTE: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

- 7) if the SDP offer does not contain an "a=key-mgmt" attribute, the MCVideo client:
- a) shall generate and store answer SDP based on received SDP offer IE in PRIVATE CALL SETUP REQUEST message, as defined in clause 10.3.1.1.2;
 - b) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7:
 - i) shall set the Call identifier IE to the stored call identifier;
 - ii) shall set the MCVideo user ID of the caller IE with stored caller ID.
 - iii) shall set the MCVideo user ID of the callee IE with stored callee ID; and
 - iv) shall set the SDP answer IE with the stored answer SDP;
 - c) shall send PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
 - d) shall establish a media session based on the SDP body of the stored answer SDP;
 - e) shall initialize the counter CFP4 with value set to 1;
 - f) shall start timer TFP4 (private call accept retransmission); and
 - g) shall enter the "P5: pending" state.

[TS 24.281, clause 10.3.2.4.3.4]

When in the "P5: pending" state, upon receiving a PRIVATE CALL ACCEPT ACK message or RTP media from originating user, the MCVideo client:

- 1) shall stop timer TFP4 (private call accept retransmission);

- 2) shall start transmission control as terminating MCVideo client as specified in clause a.b in 3GPP TS 24.581 [5];
- 3) shall start timer TFP5 (max duration); and
- 4) shall enter the "P4: part of ongoing call" state.

[TS 24.281, clause 10.3.2.4.5.4]

When in the "P4: part of ongoing call" state, upon receiving a PRIVATE CALL RELEASE message, the MCVideo client:

- 1) shall generate a PRIVATE CALL RELEASE ACK message as specified in clause 17.1.10;
 - a) shall set the Call identifier IE to the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE the stored caller ID; and
 - c) shall set the MCVideo user ID of the callee IE with the stored callee ID.
- 2) shall send the PRIVATE CALL RELEASE ACK message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
- 3) shall terminate the media session for private call;
- 4) shall start timer TFP7 (waiting for any message with same call identifier); and
- 5) shall enter the "P1: ignoring same call id" state.

[TS 24.281, clause 10.3.2.4.5.7]

When in the "P1: ignoring same call id" state, upon expiry of timer TFP7 (waiting for any message with same call identifier) the MCVideo client:

- 1) shall clear the stored call identifier; and
- 2) shall enter the "P0: start-stop" state.

[TS 24.581, clause 7.2.3.2.4]

When an MCVideo private call is established the terminating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
2. shall start timer T203(End of RTP media); and
3. shall enter 'O: has no permission' state.

[TS 24.581, clause 7.2.3.4.2]

If the transmission participant receives an indication from the MCVideo user that the MCVideo user wants to send media, the transmission participant:

1. shall send the Transmission Request message to other clients. The Transmission Request message:
 - a. if a priority different than the default transmission priority is required, shall include the Transmission Priority field with the requested priority in the <Transmission Priority> element;
 - b. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
2. shall initialise the counter C201 (Transmission request) with value set to 1;
3. shall start timer T201 (Transmission Request); and
4. shall enter 'O: pending request' state.

[TS 24.581, clause 7.2.3.7.8]

Upon receiving Transmission Granted message and if the <User ID> value in the User ID field matches its own MCVideo ID and User ID of transmission participant sending the Transmission Granted message matches the stored User ID of current transmission arbitrator, the transmission participant:

1. shall stop timer T201 (Transmission Request);
2. clear the stored current transmission arbitrator;
3. shall store the transmitter list of the Transmission Granted message;
4. may provide a transmission granted notification to the MCVideo user; and
5. shall enter 'O: has permission' state.

[TS 24.581, clause 7.2.3.6.4]

Upon receiving an indication from the MCVideo user to release permission to send RTP media, the transmission participant:

1. shall stop timer T206 (Stop talking warning), if running;
2. shall stop timer T207 (Stop talking), if running;
3. shall send a Transmission Release message towards other transmission participants. The Transmission Release message:
 - a. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - b. if the session is not initiated as a broadcast group call with the B-bit set to '1' (Broadcast group call), shall include a Transmission Indicator field set to '0' (normal call); and
4. shall enter 'O: has no permission' state.

7.2.2.3 Test description

7.2.2.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.2.2.3.2 Test procedure sequence

Table 7.2.2.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE.	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.6 'MCX CT communication over ProSe direct one-to-one communication out of E-UTRA coverage-establishment'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
4	SS-UE1 (MCVideo Client) sends a PRIVATE CALL SETUP REQUEST.	<--	PRIVATE CALL SETUP REQUEST	-	-
5	Check: Does the UE (MCVideo Client) send a PRIVATE CALL ACCEPT?	-->	PRIVATE CALL ACCEPT	1	P
6	SS-UE1 (MCVideo Client) sends a PRIVATE CALL ACCEPT ACK.	<--	PRIVATE CALL ACCEPT ACK	-	-
7	SS-UE1 (MCVideo Client) sends Transmission Granted message.	<--	Transmission Granted	-	-
8	Make the MCVideo User press the PTT button requesting permission to talk. NOTE: The MCVideo User shall keep the button pressed until otherwise written.	-	-	-	-
9	Check: Does the UE (MCVideo Client) send a Transmission Request message?	-->	Transmission Request	1	P
10	SS-UE1 (MCVideo Client) sends Transmission Granted message.	<--	Transmission Granted	-	-
11	Make the MCVideo User release transmission control. (NOTE 1)	-	-	-	-
12	Check: Does the UE (MCVideo Client) send a Transmission Release message?	-->	Transmission Release	1	P
14	SS-UE1 (MCVideo Client) sends PRIVATE CALL RELEASE message.	<--	PRIVATE CALL RELEASE	-	-
15	Check: Does the UE (MCVideo Client) send a PRIVATE CALL RELEASE ACK message.	-->	PRIVATE CALL RELEASE ACK	2	P
-	EXCEPTION: SS releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.7 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the SS'.	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

7.2.2.3.3 Specific message contents

Table 7.2.2.3.3-1: PRIVATE CALL SETUP REQUEST (step 4, Table 7.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.8-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		
SDP offer	As described in TS 37.579-1 [2], Table 5.5.3.1.4-2 with condition PRIVATE_CALL		

Table 7.2.2.3.3-2: PRIVATE CALL ACCEPT (step 5, Table 7.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.10-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		
SDP answer	As described in TS 37.579-1 [2], Table 5.5.3.1.3-2 with condition PRIVATE_CALL		

Table 7.2.2.3.3-3: PRIVATE CALL ACCEPT ACK (step 6, Table 7.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.14-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		

Table 7.2.2.3.3-4: Transmission Granted (step 7, Table 7.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK			
Information Element	Value/remark	Comment	Condition
User ID			
User ID	px_MCVideo_ID_User_B		

Table 7.2.2.3.3-5: Transmission Request (step 9, Table 7.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.1.1-1, condition OFF-NETWORK			
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Table 7.2.2.3.3-6: Transmission Granted (step 10, Table 7.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK			
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Table 7.2.2.3.3-7: PRIVATE CALL RELEASE (step 4, Table 7.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.12-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		

Table 7.2.2.3.3-8: PRIVATE CALL RELEASE ACK (step 4, Table 7.2.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.13-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		

7.2.3 Off-network / Private Call / Manual Commencement Mode / Call Released before establishment completion / Call request rejected / Call establishment successful / Client Originated (CO)

7.2.3.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with manual commencement, and, the UE is in an off-network environment
}
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo private call with Manual
Commencement Mode }
  then { UE (MCVideo Client) sends a PRIVATE CALL SETUP REQUEST message requesting the
establishment of an MCVideo private call with Manual Commencement Mode }
}
```

(2)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with manual commencement, and, the UE is in an off-network
environment, and, UE (MCVideo Client) having sent a PRIVATE CALL SETUP REQUEST message requesting
establishment of an MCVideo private call with Manual Commencement Mode }
ensure that {
  when { the User requests termination of the call after a PRIVATE CALL RINGING message has been
received but before the completion of the call establishment }
  then { UE (MCVideo Client) sends a PRIVATE CALL RELEASE message and terminates the call
establishment }
}
```

(3)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with manual commencement, and, the UE is in an off-network
environment, and, UE (MCVideo Client) having sent a PRIVATE CALL SETUP REQUEST message requesting
establishment of an MCVideo private call with Manual Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a PRIVATE CALL REJECT message after a PRIVATE CALL RINGING
message has been received but before the completion of the call establishment }
  then { UE (MCVideo Client) terminates the call establishment }
}
```

(4)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with manual commencement, and, the UE is in an off-network
environment, and, UE (MCVideo Client) having sent a PRIVATE CALL SETUP REQUEST message requesting
establishment of an MCVideo private call with Manual Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a PRIVATE CALL RINGING message followed by a PRIVATE CALL
ACCEPT message }
  then { UE (MCVideo Client) transmits a PRIVATE CALL ACCEPT ACK message and considers the call as
being established }
}
```

7.2.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 10.3.2.4.2.1, 10.3.2.4.2.3, 10.3.2.4.2.9, 10.3.2.4.5.5, 10.3.2.4.2.7, 10.3.2.4.2.8, 10.3.2.4.5.1, TS 24.581 clauses 7.2.3.2.2, 7.2.3.5.5. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 10.3.2.4.2.1]

When in the "P0: start-stop" state or "P1: ignoring same call id", upon an indication from MCVideo User to initiate a private call and the value of "/<x>/<x>/Common/PrivateCall/Authorised" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", the MCVideo client:

- 1) shall generate and store the call identifier as a random number uniformly distributed between (0, 65536);
- 2) shall store own MCVideo user ID as caller ID;
- 3) shall store MCVideo user ID of the callee as callee ID;
- 4) shall store "AUTOMATIC COMMENCEMENT MODE" as commencement mode, if requested and the value of "/<x>/<x>/Common/PrivateCall/AutoCommence" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true". Otherwise if the value of "/<x>/<x>/Common/PrivateCall/ManualCommence" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", store "MANUAL COMMENCEMENT MODE" as commencement mode;
- 5) shall store "PRIVATE CALL" as the current call type;;
- 6) if an end-to-end security context needs to be established then:
 - a) shall use keying material provided by the key management server to generate a PCK as described in 3GPP TS 33.180 [8];
 - b) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - c) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID of the invited user and a time related parameter as described in 3GPP TS 33.180 [8];
 - d) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8];
 - e) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8] and;
 - g) shall store the MIKEY-SAKKE I_MESSAGE for later inclusion in an SDP body;
- 7) may store current user location as user location;
- 8) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network private call as described in 3GPP TS 24.483 [4].
- 9) shall generate and store offer SDP, as defined in clause 10.3.1.1.2;
- 10) shall generate a PRIVATE CALL SETUP REQUEST message as specified in clause 17.1.5. In the PRIVATE CALL SETUP REQUEST message, the MCVideo client:
 - a) shall set the Call identifier IE with the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with the stored caller ID;
 - c) shall set the MCVideo user ID of the callee IE with the stored callee ID;
 - d) shall set the Commencement mode IE with the stored commencement mode;

- e) shall set the Call type IE with the stored current call type;
 - f) shall set the SDP offer IE with the stored offer SDP; and
 - g) may set the User location IE with the stored user location.
- 11) shall send the PRIVATE CALL SETUP REQUEST message towards other MCVideo client according to rules and procedures as specified in clause 10.3.1.1.1;
- 12) shall initialize the counter CFP1 (private call request retransmission) with the value set to 1;
- 13) shall start timer TFP1 (private call request retransmission); and
- 14) shall enter the "P2: waiting for call response" state.

[TS 24.281, clause 10.3.2.4.2.3]

When in the "P2: waiting for call response" state, upon receiving a PRIVATE CALL RINGING message, the MCVideo client:

- 1) shall remain in the "P2: waiting for call response" state.

[TS 24.281, clause 10.3.2.4.2.9]

When in the "P2: waiting for call response" state, upon an indication from MCVideo User to cancel the private call request, the MCVideo client:

- 1) shall generate a PRIVATE CALL RELEASE message as specified in clause 17.1.9;
 - a) shall set the Call identifier IE to the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with the stored caller ID; and
 - c) shall set the MCVideo user ID of the callee IE with the stored callee ID;
- 2) shall send the PRIVATE CALL RELEASE message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
- 3) shall start timer TFP3 (private call release retransmission); and
- 4) shall enter the "P3: waiting for release response" state.

[TS 24.281, clause 10.3.2.4.5.5]

When in the "P3: waiting for release response" state, upon receiving a PRIVATE CALL RELEASE ACK to PRIVATE CALL RELEASE message, the MCVideo client:

- 1) shall stop timer TFP3 (private call release retransmission), if running;
- 2) shall terminate the media session;
- 3) shall start timer TFP7 (waiting for any message with same call identifier); and
- 4) shall enter the "P1: ignoring same call id" state.

[TS 24.281, clause 10.3.2.4.2.7]

When in the "P2: waiting for call response" state, upon receiving a PRIVATE CALL REJECT message in response to PRIVATE CALL SETUP REQUEST message with Call identifier IE same as the stored call identifier, the MCVideo client:

- 1) shall stop timer TFP1 (call setup retransmission), if running;
- 2) shall stop timer TFP2 (waiting for call response message), if running;
- 3) shall start timer TFP7 (waiting for any message with same call identifier);
- 4) shall release the call control state machine; and

- 5) shall enter the "P1: ignoring same call id" state.

[TS 24.281, clause 10.3.2.4.2.8]

When in the "P2: waiting for call response" state, upon receiving a PRIVATE CALL ACCEPT message response to PRIVATE CALL SETUP REQUEST message with the same call identifier, the MCVideo client:

- 1) shall store the SDP answer IE received in the PRIVATE CALL ACCEPT message as answer SDP;
- 2) shall generate a PRIVATE CALL ACCEPT ACK message as specified in clause 17.1.11:
 - a) shall set the Call identifier IE to the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with the stored caller ID; and
 - c) shall set the MCVideo user ID of the callee IE with the stored callee ID.
- 3) shall send the PRIVATE CALL ACCEPT ACK message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
- 4) shall stop timer TFP1 (call setup retransmission), if running;
- 5) shall stop timer TFP2 (waiting for call response message), if running;
- 6) shall establish a media session based on the SDP body of the stored answer SDP;
- 7) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
- 8) shall start timer TFP5 (max duration); and
- 9) shall enter the "P4: part of ongoing call" state.

[TS 24.281, clause 10.3.2.4.5.1]

When in the "P4: part of ongoing call" state, upon an indication from MCVideo User to release a private call, the MCVideo client:

- 1) shall generate a PRIVATE CALL RELEASE message as specified in clause 17.1.9. In the PRIVATE CALL RELEASE message, the MCVideo client:
 - a) shall set the Call identifier IE to the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with stored caller ID; and
 - c) shall set the MCVideo user ID of the callee IE with stored callee ID.
- 2) shall send the PRIVATE CALL RELEASE message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
- 3) shall initialize the counter CFP3 (private call release retransmission) with the value set to 1;
- 4) shall start timer TFP3 (private call release retransmission); and
- 5) shall enter the "P3: waiting for release response" state.

[TS 24.581, clause 7.2.3.2.2]

When an MCVideo call is established with session announcement including an explicit transmission request, the originating transmission participant:

1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
2. shall send Transmission Granted message towards other transmission participants. The Transmission Granted message:
 - a. shall include the granted priority in the Transmission priority field;

- b. shall include the MCVideo user's own MCVideo ID in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types; and
3. shall enter 'O: transmission arbitration' state.

[TS 24.581, clause 7.2.3.5.5]

Upon receiving an indication from the MCVideo user to release permission to send RTP media and there is no transmitter in transmitter list, the transmission participant:

- 1. shall stop timer T206 (Stop talking warning), if running;
- 2. shall stop timer T207 (Stop talking), if running;
- 3. shall send a Transmission Arbitration Release message towards other transmission participants. The Transmission Arbitration Release message:
 - a. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - b. if the session is not initiated as a broadcast group call with the B-bit set to '1' (Broadcast group call), shall include a Transmission Indicator field set to '0' (normal call);
- 4. shall start timer T230 (Inactivity); and
- 5. shall enter 'O: silence' state.

7.2.3.3 Test description

7.2.3.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server) in the Preamble
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.

- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is Switched OFF (state 1) according to TS 36.508 [24].

7.2.3.3.2

Test procedure sequence

Table 7.2.3.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE.	-	-	-	-
1A	Trigger the UE to reset UTC time and location. (NOTE 1)	-	-	-	-
2	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
3	Make the MCVideo User request the establishment of an MCVideo private call with Manual Commencement Mode, with Transmission Control. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.5 'MCX CO communication over ProSe direct one-to-one communication out of E-UTRA coverage-establishment'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
4	Check: Does the UE (MCVideo Client) send a PRIVATE CALL SETUP REQUEST, Commencement mode set to MANUAL COMMENCEMENT MODE?	-->	PRIVATE CALL SETUP REQUEST	1	P
5	SS-UE1 (MCVideo Client) sends a PRIVATE CALL RINGING message.	<--	PRIVATE CALL RINGING	-	-
6	Make the MCVideo User request termination of the MCVideo private call. (NOTE 1)	-	-	-	-
7	Check: Does the UE (MCVideo Client) send PRIVATE CALL RELEASE message?	-->	PRIVATE CALL RELEASE	2	P
8	SS-UE1 (MCVideo Client) sends a PRIVATE CALL RELEASE ACK message	<--	PRIVATE CALL RELEASE ACK	-	-
-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8, 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
9	Wait for 5 sec to ensure the UE is in stable state - scanning for incoming ProSe messages.	-	-	-	-
10	Make the MCVideo User request the establishment of an MCVideo private call with Manual Commencement Mode, with Transmission Control. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.5 'MCX CO communication over ProSe direct one-to-one communication out of E-UTRA coverage-establishment'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-

11	Check: Does the UE (MCVideo Client) send a PRIVATE CALL SETUP REQUEST, Commencement mode set to MANUAL COMMENCEMENT MODE?	-->	PRIVATE CALL SETUP REQUEST	1	P
12	SS-UE1 (MCVideo Client) sends a PRIVATE CALL RINGING message.	<--	PRIVATE CALL RINGING	-	-
12 A	Wait for 3 sec to ensure that the UE receives the message sent in step 12 before the one sent in step 13.	-	-	-	-
13	SS-UE1 (MCVideo Client) sends a PRIVATE CALL ACCEPT message.	<--	PRIVATE CALL REJECT	-	-
13 A	Wait for 3 sec to ensure that the UE receives the message sent in step 13 before the one sent in step 14.	-	-	-	-
14	SS-UE1 (MCVideo Client) sends a PRIVATE CALL ACCEPT message.	<--	PRIVATE CALL ACCEPT	-	-
15	Check: Does the UE (MCVideo Client) send a PRIVATE CALL ACCEPT ACK in the next 1 sec? NOTE: It is expected that upon receipt of the message sent in step 13 the UE has entered the "P1: ignoring same call id" state and therefore it shall ignore the message sent in step 14.	-->	PRIVATE CALL ACCEPT ACK	3	F
-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX CO communication over ProSe direct one-to-one communication out of E-UTRA coverage-release by the UE'.	-	-	-	-
16	Wait for 5 sec to ensure the UE is in stable state - scanning for incoming ProSe messages.	-	-	-	-
17	Make the MCVideo User request the establishment of an MCVideo private call with Manual Commencement Mode, with Transmission Control. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.5 'MCX CO communication over ProSe direct one-to-one communication out of E-UTRA coverage-establishment'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
18	Check: Does the UE (MCVideo Client) send a PRIVATE CALL SETUP REQUEST, Commencement mode set to MANUAL COMMENCEMENT MODE?	-->	PRIVATE CALL SETUP REQUEST	1	P
19	SS-UE1 (MCVideo Client) sends a PRIVATE CALL RINGING message.	<--	PRIVATE CALL RINGING	-	-
19 A	Wait for 3 sec to ensure that the UE receives the message sent in step 19 before the one sent in step 20.	-	-	-	-
20	SS-UE1 (MCVideo Client) sends a PRIVATE CALL ACCEPT message.	<--	PRIVATE CALL ACCEPT	-	-
21	Check: Does the UE (MCVideo Client) send a PRIVATE CALL ACCEPT ACK?	-->	PRIVATE CALL ACCEPT ACK	4	P

22	Make the MCVideo User press the PTT button requesting permission to talk. NOTE 1: Depending on UE implementation the PTT button may already been pressed in step 17. NOTE 2: The MCVideo User shall keep the button pressed until otherwise written.	-	-	-	-
23	Does the UE (MCVideo Client) send a Transmission Granted message?	-->	Transmission Granted	4	P
24	Make the MCVideo User release the transmission control. (NOTE 1)	-	-	-	-
25	Check: Does the UE (MCVideo Client) sends a Transmission Arbitration Release message?	-->	Transmission Arbitration Release	4	P
26	Make the MCVideo User request termination of the MCVideo private call. (NOTE 1)	-	-	-	-
27	The UE (MCVideo Client) send PRIVATE CALL RELEASE message.	-->	PRIVATE CALL RELEASE	-	-
28	SS-UE1 (MCVideo Client) sends a PRIVATE CALL RELEASE ACK message.	<--	PRIVATE CALL RELEASE ACK	-	-
-	EXCEPTION: SS releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

7.2.3.3.3 Specific message contents

Table 7.2.3.3.3-1: PRIVATE CALL SETUP REQUEST (Steps 4, 11, 18, Table 7.2.3.3.2-1)

Derivation Path: 37.579-1 [2], Table 5.5.14.8-1			
Information Element	Value/remark	Comment	Condition
Commencement mode	"00000001"	Manual Commencement Mode	

Table 7.2.3.3.3-2: Transmission Granted (step 23, Table 7.2.3.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK

Table 7.2.3.3.3-3: Transmission Arbitration Release (step 25, Table 7.2.3.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.4-1, condition OFF-NETWORK

7.2.4 Off-network / Private Call / Manual Commencement Mode / Client Terminated (CT)

7.2.4.1 Test Purpose (TP)

(1)

with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to initiate/cancel private calls with automatic commencement in off-network environment, and, the UE is in an off-network environment }

```

ensure that {
  when { the UE (MCVideo Client) receives a request for establishment of an MCVideo private call
with Manual Commencement Mode via a PRIVATE CALL SETUP REQUEST message }
    then { UE (MCVideo Client) sends a PRIVATE CALL RINGING message }
}

```

(2)

```

with { UE (MCVideo Client) having responded to a PRIVATE CALL SETUP REQUEST message with a PRIVATE
CALL RINGING message }
ensure that {
  when { MCVideo User rejects the incoming private call with Manual Commencement Mode }
    then { UE (MCVideo Client) sends a PRIVATE CALL REJECT message, and, starts timer TFP7 (waiting
for any message with same call identifier) }
}

```

(3)

```

with { UE (MCVideo Client) having responded to a PRIVATE CALL SETUP REQUEST message with a PRIVATE
CALL RINGING message }
ensure that {
  when { MCVideo User accepts the incoming private call with Manual Commencement Mode }
    then { UE (MCVideo Client) sends a PRIVATE CALL ACCEPT message accepting the establishment of a
private call with Manual Commencement Mode, and, respects the transmission control imposed by the
transmission control entity/arbitrator }
}

```

(4)

```

with { UE (MCVideo Client) having an ongoing private call }
ensure that {
  when { the MCVideo User receives a PRIVATE CALL RELEASE message to end the private call }
    then { UE (MCVideo Client) sends a PRIVATE CALL RELEASE ACK message }
}

```

7.2.4.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in:

TS 24.281 clauses 10.3.2.4.4.1, 10.3.2.4.4.7, 10.3.2.4.5.7, 10.3.2.4.4.3, 10.3.2.4.4.5, 10.3.2.4.5.4, TS 24.581 clauses 7.2.3.2.4, 7.2.3.4.2, 7.2.3.7.8, 7.2.3.6.4. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 10.3.2.4.4.1]

When in the "P0: start-stop" or "P1: ignoring same call id" state, upon receiving a PRIVATE CALL SETUP REQUEST message with Commencement mode IE set to "MANUAL COMMENCEMENT MODE" and Call identifier IE different from stored call identifier, the MCVideo client:

- 1) shall store the Call identifier IE in the received message as call identifier;
- 2) shall set the stored current call type to "PRIVATE CALL";
- 3) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network private call as described in 3GPP TS 24.483 [4].
- 4) shall store the MCVideo user ID of the caller IE as received in the PRIVATE CALL SETUP REQUEST as caller ID;
- 5) shall store own MCVideo user ID as callee ID;
- 6) shall generate a PRIVATE CALL RINGING message as specified in clause 17.1.6;
 - a) shall set the Call identifier IE to the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with the stored caller ID; and
 - c) shall set the MCVideo user ID of the callee IE with the stored callee ID;

- 7) shall send PRIVATE CALL RINGING message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
- 8) shall start timer TFP2 (waiting for call response message); and
- 9) shall enter the "P5: pending" state.

[TS 24.281, clause 10.3.2.4.4.7]

When in the "P5: pending" state, upon an indication from MCVideo User to reject the incoming private call, the MCVideo client:

- 1) shall generate a PRIVATE CALL REJECT message as specified in clause 17.1.8:
 - a) shall set the Call identifier IE to the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE with the stored caller ID;
 - c) shall set the MCVideo user ID of the callee IE with stored callee ID; and
 - d) shall set the Reason IE as "FAILED", if requested to restrict notification of call failure and the value of "/<x>/<x>/Common/PrivateCall/FailRestrict" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true". Otherwise, shall set the Reason IE as "REJECT";
- 2) shall send the PRIVATE CALL REJECT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
- 3) shall start timer TFP7 (waiting for any message with same call identifier); and
- 4) shall enter the "P1: ignoring same call id" state.

[TS 24.281, clause 10.3.2.4.5.7]

When in the "P1: ignoring same call id" state, upon expiry of timer TFP7 (waiting for any message with same call identifier) the MCVideo client:

- 1) shall clear the stored call identifier; and
- 2) shall enter the "P0: start-stop" state.

[TS 24.281, clause 10.3.2.4.4.3]

When in the "P5: pending" state, upon an indication from MCVideo User to accept the incoming private call, the MCVideo client:

- 1) if the SDP offer contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo user from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if the validation of the signature failed, shall generate a PRIVATE CALL REJECT message as specified in clause 17.1.8. In the PRIVATE CALL REJECT message, the MCVideo client:
 - i) shall set the call identifier IE to the stored call identifier;
 - ii) shall set the MCVideo user ID of the caller IE with the stored caller ID;
 - iii) shall set the MCVideo user ID of the callee IE with the stored callee ID;
 - iv) shall set the Reason IE as "FAILED", if requested to restrict notification of call failure and the value of "/<x>/<x>/Common/PrivateCall/FailRestrict" leaf node present in the user profile as specified in

3GPP TS 24.483 [4] is set to "true". Otherwise, shall set the reason IE as "E2E SECURITY CONTEXT FAILURE";

- v) shall send the PRIVATE CALL REJECT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1; and
- vi) shall enter the "P1: ignoring same call id" state;
- e) if the validation of the signature was successful:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8];
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];
 - iii) shall generate and store answer SDP based on received SDP offer IE in PRIVATE CALL SETUP REQUEST message, as defined in clause 10.3.1.1.2;
 - iv) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7. In the PRIVATE CALL ACCEPT message, the MCVideo client:
 - A) shall set the Call identifier IE to the stored call identifier;
 - B) shall set the MCVideo user ID of the caller IE with the stored caller ID;
 - C) shall set the MCVideo user ID of the callee IE with the stored callee ID; and
 - D) shall set the SDP answer IE with the stored answer SDP;
 - v) shall send the PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
 - vi) shall establish a media session based on the SDP body of the private call;
 - vii) shall stop timer TFP2 (waiting for call response message);
 - viii) shall initialize the counter CFP4 with value set to 1;
 - ix) shall start timer TFP4 (private call accept retransmission); and
 - x) shall remain in the "P5: pending" state; and

NOTE: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

- 2) if the SDP offer does not contain an "a=key-mgmt" attribute, the MCVideo client:
 - a) shall generate and store answer SDP based on received SDP offer IE in PRIVATE CALL SETUP REQUEST message, as defined in clause 10.3.1.1.2;
 - b) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7. In the PRIVATE CALL ACCEPT message, the MCVideo client:
 - i) shall set the Call identifier IE to the stored call identifier;
 - ii) shall set the MCVideo user ID of the caller IE with the stored caller ID;
 - iii) shall set the MCVideo user ID of the callee IE with the stored callee ID; and
 - iv) shall set the SDP answer IE with the stored answer SDP;
 - c) shall send the PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
 - d) shall establish a media session based on the SDP body of the private call;
 - e) shall stop timer TFP2 (waiting for call response message);

- f) shall initialize the counter CFP4 with value set to 1;
- g) shall start timer TFP4 (private call accept retransmission); and
- h) shall remain in the "P5: pending" state.

[TS 24.281, clause 10.3.2.4.4.5]

When in the "P5: pending" state, upon receiving a PRIVATE CALL ACCEPT ACK message or RTP media from originating user, the MCVideo client:

- 1) shall stop timer TFP4 (private call accept retransmission);
- 2) shall start transmission control as terminating MCVideo client as specified in clause a.b in 3GPP TS 24.581 [5];
- 3) shall start timer TFP5 (max duration); and
- 4) shall enter the "P4: part of ongoing call" state.

[TS 24.281, clause 10.3.2.4.5.4]

When in the "P4: part of ongoing call" state, upon receiving a PRIVATE CALL RELEASE message, the MCVideo client:

- 1) shall generate a PRIVATE CALL RELEASE ACK message as specified in clause 17.1.10;
 - a) shall set the Call identifier IE to the stored call identifier;
 - b) shall set the MCVideo user ID of the caller IE the stored caller ID; and
 - c) shall set the MCVideo user ID of the callee IE with the stored callee ID.
- 2) shall send the PRIVATE CALL RELEASE ACK message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
- 3) shall terminate the media session for private call;
- 4) shall start timer TFP7 (waiting for any message with same call identifier); and
- 5) shall enter the "P1: ignoring same call id" state.

[TS 24.581, clause 7.2.3.2.4]

When an MCVideo private call is established the terminating transmission participant:

- 1. shall create an instance of a transmission participant state transition diagram for basic operation state machine;
- 2. shall start timer T203(End of RTP media); and
- 3. shall enter 'O: has no permission' state.

[TS 24.581, clause 7.2.3.4.2]

If the transmission participant receives an indication from the MCVideo user that the MCVideo user wants to send media, the transmission participant:

- 1. shall send the Transmission Request message to other clients. The Transmission Request message:
 - a. if a priority different than the default transmission priority is required, shall include the Transmission Priority field with the requested priority in the <Transmission Priority> element;
 - b. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - c. if the transmission request is a broadcast group call, system call, emergency call or an imminent peril call, shall include a Transmission Indicator field indicating the relevant call types;
- 2. shall initialise the counter C201 (Transmission request) with value set to 1;

3. shall start timer T201 (Transmission Request); and
4. shall enter 'O: pending request' state.

[TS 24.581, clause 7.2.3.7.8]

Upon receiving Transmission Granted message and if the <User ID> value in the User ID field matches its own MCVideo ID and User ID of transmission participant sending the Transmission Granted message matches the stored User ID of current transmission arbitrator, the transmission participant:

1. shall stop timer T201 (Transmission Request);
2. clear the stored current transmission arbitrator;
3. shall store the transmitter list of the Transmission Granted message;
4. may provide a transmission granted notification to the MCVideo user; and
5. shall enter 'O: has permission' state.

[TS 24.581, clause 7.2.3.6.4]

Upon receiving an indication from the MCVideo user to release permission to send RTP media, the transmission participant:

1. shall stop timer T206 (Stop talking warning), if running;
2. shall stop timer T207 (Stop talking), if running;
3. shall send a Transmission Release message towards other transmission participants. The Transmission Release message:
 - a. shall include the MCVideo ID of the MCVideo user in the User ID field; and
 - b. if the session is not initiated as a broadcast group call with the B-bit set to '1' (Broadcast group call), shall include a Transmission Indicator field set to '0' (normal call); and
4. shall enter 'O: has no permission' state.

7.2.4.3 Test description

7.2.4.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.2.4.3.2

Test procedure sequence

Table 7.2.4.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE.	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.6 'MCX CT communication over ProSe direct one-to-one communication out of E-UTRA coverage-establishment'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
4	SS-UE1 (MCVideo Client) sends a PRIVATE CALL SETUP REQUEST.	<--	PRIVATE CALL SETUP REQUEST	-	-
5	Check: Does the UE (MCVideo Client) send a PRIVATE CALL RINGING message?	-->	PRIVATE CALL RINGING	1	P
6	Make the MCVideo User reject the incoming private call. (NOTE 1)	-	-	-	-
7	Check: Does the UE (MCVideo Client) send a PRIVATE CALL REJECT message? NOTE: It is expected that the UE shall start TFP7 (waiting for any message with same call identifier) upon sending of the PRIVATE CALL REJECT message.	-->	PRIVATE CALL REJECT	2	P
8	Check: Does the TFP7 (waiting for any message with same call identifier) expire?	-	-	2	P
-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.6 'MCX CT communication over ProSe direct one-to-one communication out of E-UTRA coverage-establishment'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
9	SS-UE1 (MCVideo Client) sends a PRIVATE CALL SETUP REQUEST.	<--	PRIVATE CALL SETUP REQUEST	-	-
10	Check: Does the UE (MCVideo Client) send a PRIVATE CALL RINGING message?	-->	PRIVATE CALL RINGING	1	P
11	Make the MCVideo User accept the incoming private call. (NOTE 1)	-	-	-	-
12	Check: Does the UE (MCVideo Client) send a PRIVATE CALL ACCEPT?	-->	PRIVATE CALL ACCEPT	3	P
13	SS-UE1 (MCVideo Client) sends a PRIVATE CALL ACCEPT ACK.	<--	PRIVATE CALL ACCEPT ACK	-	-

14	SS-UE1 (MCVideo Client) sends Transmission Granted message.	<--	Transmission Granted	-	-
15	Make the MCVideo User press the PTT button requesting permission to talk. NOTE: The MCVideo User shall keep the button pressed until otherwise written.	-	-	-	-
16	Check: Does the UE (MCVideo Client) send a Transmission Request message?	-->	Transmission Request	3	P
17	SS-UE1 (MCVideo Client) sends Transmission Granted message.	<--	Transmission Granted	-	-
18	Make the MCVideo User release transmission control. (NOTE 1)	-	-	-	-
19	Check: Does the UE (MCVideo Client) send a Transmission Release message?	-->	Transmission Release	3	P
20	SS-UE1 (MCVideo Client) sends PRIVATE CALL RELEASE message.	<--	PRIVATE CALL RELEASE	-	-
21	Check: Does the UE (MCVideo Client) send a PRIVATE CALL RELEASE ACK message.	-->	PRIVATE CALL RELEASE ACK	4	P
-	EXCEPTION: SS releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.7 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the SS'.	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

7.2.4.3.3 Specific message contents

Table 7.2.4.3.3-1: PRIVATE CALL SETUP REQUEST (steps 4, 9, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.8-1			
Information Element	Value/remark	Comment	Condition
Commencement mode	"00000001"	Manual Commencement Mode	
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		
SDP offer	As described in TS 37.579-1 [2], Table 5.5.3.1.4-2 with condition PRIVATE_CALL		

Table 7.2.4.3.3-2: PRIVATE CALL RINGING (steps 5, 10, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.9-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		

Table 7.2.4.3.3-3: PRIVATE CALL REJECT (step 7, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.5.11.1-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		

Table 7.2.4.3.3-4: PRIVATE CALL ACCEPT (step 12, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.10-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		

Table 7.2.4.3.3-5: PRIVATE CALL ACCEPT ACK (step 13, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.14-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		

Table 7.2.4.3.3-6: Transmission Granted (step 14, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK			
Information Element	Value/remark	Comment	Condition
User ID			
User ID	px_MCVideo_ID_User_B		

Table 7.2.4.3.3-7: Transmission Request (step 16, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.1.1-1, condition OFF-NETWORK			
---	--	--	--

Table 7.2.4.3.3-8: Transmission Granted (step 17, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.11.2.1-1, condition OFF-NETWORK			
---	--	--	--

Table 7.2.4.3.3-9: PRIVATE CALL RELEASE (step 4, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.12-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		

Table 7.2.4.3.3-10: PRIVATE CALL RELEASE ACK (step 4, Table 7.2.4.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.13-1			
Information Element	Value/remark	Comment	Condition
MCVideo user ID of the caller	px_MCVideo_ID_User_B		
MCVideo user ID of the callee	px_MCVideo_ID_User_A		

7.3 Emergency Alert

7.3.1 Off-network / Emergency Alert / Client Originated (CO)

7.3.1.1 Test Purpose (TP)

(1)

with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to initiate/cancel private calls with automatic commencement in off-network environment, and, the UE is in an off-network environment }

```

ensure that {
  when { the MCVideo User requests to transmit an emergency alert for an MCVideo group ID }
  then { UE (MCVideo Client) sends a GROUP EMERGENCY ALERT message, and, starts timer TFE2
(emergency alert retransmission) }
}

```

(2)

```

with { UE (MCVideo Client) having sent a GROUP EMERGENCY ALERT message }
ensure that {
  when { TFE2 (emergency alert retransmission) timer expires }
  then { UE (MCVideo Client) sends a GROUP EMERGENCY ALERT message, and, starts timer TFE2
(emergency alert retransmission) }
}

```

(3)

```

with { UE (MCVideo Client) having sent a GROUP EMERGENCY ALERT message }
ensure that {
  when { MCVideo User cancels the Emergency Alert }
  then { UE (MCVideo Client) sends a GROUP EMERGENCY ALERT CANCEL message, and, stops timer TFE2
(emergency alert retransmission) }
}

```

7.3.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 11.3.3.1, 11.3.3.2, 11.3.3.5. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 11.3.3.1]

When in state "E1: Not in emergency state", upon receiving an indication from the MCVideo user to transmit an emergency alert for an MCVideo group ID and the value of "/<x>/<x>/Common/AllowedActivateAlert" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", the MCVideo client:

- 1) shall set the stored emergency state as "true";
- 2) shall set the stored MCVideo group ID to the indicated MCVideo group ID;
- 3) shall generate a GROUP EMERGENCY ALERT message as specified in clause 17.1.14. In the GROUP EMERGENCY ALERT message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the stored MCVideo group ID;
 - b) shall set the Originating MCVideo user ID IE to own MCVideo user ID;
 - c) shall set the Organization name IE to own organization name; and
 - d) may set the User location IE with client's current location, if requested;
- 4) shall send the GROUP EMERGENCY ALERT message as specified in clause 9.3.1.1.1;
- 5) shall start timer TFE2 (emergency alert retransmission); and
- 6) shall enter "E2: Emergency state" state.

[TS 24.281, clause 11.3.3.2]

When in state "E2: Emergency state", upon expiry of timer TFE2 (emergency alert retransmission), the MCVideo client:

- 1) shall generate a GROUP EMERGENCY ALERT message as specified in clause 17.1.14. In the GROUP EMERGENCY ALERT message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the stored MCVideo group ID;
 - b) shall set the originating MCVideo user ID IE to own MCVideo user ID;
 - c) shall set the Organization name IE to own organization name; and

- d) may set the Location IE with client's current location, if requested; and
- 2) shall send the GROUP EMERGENCY ALERT message as specified in clause 9.3.1.1.1;
- 3) shall start the timer TFE2 (emergency alert retransmission); and
- 4) shall remain in the current state.

[TS 24.281, clause 11.3.3.5]

When in "E2: Emergency state", upon receiving an indication from the MCVideo user to cancel an emergency alert and the value of "`<x>/<x>/Common/AllowedCancelAlert`" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", the MCVideo client:

- 1) shall set the stored emergency state as "false";
- 2) shall generate a GROUP EMERGENCY ALERT CANCEL message as specified in clause 17.1.16. In the GROUP EMERGENCY ALERT CANCEL message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the stored MCVideo group ID; and
 - b) shall set the Originating MCVideo user ID IE to own MCVideo user ID; and
- 3) shall send the GROUP EMERGENCY ALERT CANCEL message as specified in clause 9.3.1.1.1;
- 4) shall stop timer TFE2 (emergency alert retransmission); and
- 5) shall enter "E1: Not in emergency state" state.

7.3.1.3 Test description

7.3.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.

- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.3.1.3.2

Test procedure sequence

Table 7.3.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE.	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
4	Make the MCVideo User request to transmit an emergency alert for Group A. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.11 'MCX CO communication over ProSe direct one-to-many communication out of E-UTRA coverage / Monitoring/Discoverer procedure for group member discovery / One-to-many communication'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
-	EXCEPTION: Steps 5a1-5b1 describe behaviour that depends on UE implementation; the "lower case letter" identifies a step sequence that takes place when the UE (MCVideo Client) includes user location information in the GROUP EMRGENCY ALERT message or not.	-	-	-	-
5a1	Check: Does the UE (MCVideo Client) send a GROUP EMERGENCY ALERT message without user location? NOTE: It is expected that the UE shall start timer TFE2 (emergency alert retransmission).	-->	GROUP EMERGENCY ALERT	1	P
5b1	Check: Does the UE (MCVideo Client) send a GROUP EMERGENCY ALERT message with user location? NOTE: It is expected that the UE shall start timer TFE2 (emergency alert retransmission).	-->	GROUP EMERGENCY ALERT	1	P
6	Start TFE2 (emergency alert retransmission) 10 seconds as defined in 37.579-1 [2] Table 5.5.8.1-1.	-	-	-	-
7	SS-UE1 (MCVideo Client) sends a GROUP EMERGENCY ALERT ACK message.	<--	GROUP EMERGENCY ALERT ACK	-	-
8	TFE2 expires.	-	-	-	-
-	EXCEPTION: Steps 9a1-9b1 describe behaviour that depends on UE implementation; the "lower case letter" identifies a step sequence that takes place when the UE (MCVideo Client) includes user location information in the GROUP EMRGENCY ALERT message or not.	-	-	-	-
9a1	Check: Does the UE (MCVideo Client) send a GROUP EMERGENCY ALERT message without user location? NOTE: It is expected that the UE shall start timer TFE2 (emergency alert retransmission).	-->	GROUP EMERGENCY ALERT	2	P

9b1	Check: Does the UE (MCVideo Client) send a GROUP EMERGENCY ALERT message with user location? NOTE: It is expected that the UE shall start timer TFE2 (emergency alert retransmission).	-->	GROUP EMERGENCY ALERT	2	P
10	Before timer TFE2 expires, make the MCVideo User request to cancel the emergency alert for Group A. (NOTE 1)	-	-	-	-
11	Check: Does the UE (MCVideo Client) send a GROUP EMERGENCY ALERT CANCEL message? NOTE: It is expected that the UE shall stop timer TFE2 (emergency alert retransmission).	-->	GROUP EMERGENCY ALERT CANCEL	3	P
12	SS-UE1 (MCVideo Client) sends a GROUP EMERGENCY ALERT CANCEL ACK message.	<--	GROUP EMERGENCY ALERT CANCEL ACK	-	-
-	EXCEPTION: UE releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.8 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the UE'.	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

7.3.1.3.3 Specific message contents

Table 7.3.1.3.3-1: GROUP EMERGENCY ALERT (steps 5b1, 9b1, Table 7.3.1.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.15.1-1, condition USER_LOC

7.3.2 Off-network / Emergency Alert / Client Terminated (CO)

7.3.2.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorized for MCVideo Service, including authorized to
initiate/cancel private calls with automatic commencement in off-network environment, and, the UE is
in an off-network environment }
ensure that {
  when { UE (MCVideo Client) receives a GROUP EMERGENCY ALERT message }
  then { UE (MCVideo Client) sends a GROUP EMERGENCY ALERT ACK message, and, starts timer TFE1
(Emergency Alert) }
}
```

(2)

```
with { UE (MCVideo Client) having received a GROUP EMERGENCY ALERT message }
ensure that {
  when { UE (MCVideo Client) receives a retransmission of the original GROUP EMERGENCY ALERT message }
  then { UE (MCVideo Client) does not send a GROUP EMERGENCY ALERT ACK message }
}
```

(3)

```
with { UE (MCVideo Client) having received a GROUP EMERGENCY ALERT message }
ensure that {
  when { UE (MCVideo Client) receives a GROUP EMERGENCY ALERT CANCEL message }
  then { UE (MCVideo Client) sends a GROUP EMERGENCY ALERT CANCEL ACK message, and, stops timer
TFE1 (Emergency Alert) }
}
```

}

7.3.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 11.3.3.3, 11.3.3.4, 11.3.3.6. Unless otherwise stated these are Rel-15 requirements.

[TS 24.281, clause 11.3.3.3]

When in state "E1: Not in emergency state" or in "E2: Emergency state", upon receiving a GROUP EMERGENCY ALERT message with the Originating MCVideo user ID IE not stored in the list of users in emergency, the MCVideo client:

- 1) shall store the Originating MCVideo user ID IE and location IE in the list of users in emergency;
- 2) shall generate a GROUP EMERGENCY ALERT ACK message as specified in clause 17.1.15. In the GROUP EMERGENCY ALERT ACK message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the MCVideo group ID IE of the received GROUP EMERGENCY ALERT message;
 - b) shall set the Sending MCVideo user ID IE to own MCVideo user ID; and
 - c) shall set the Originating MCVideo user ID IE to the Originating MCVideo user ID IE of the received GROUP EMERGENCY ALERT message; and
- 3) shall send the GROUP EMERGENCY ALERT ACK message as specified in clause 9.3.1.1.1;
- 4) shall start timer TFE1 (Emergency Alert); and
- 5) shall remain in the current state.

NOTE: Each instance of timer TFE1 is per MCVideo user ID.

[TS 24.281, clause 11.3.3.4]

When in state "E1: Not in emergency state" or in "E2: Emergency state", upon receiving a GROUP EMERGENCY ALERT message with the Originating MCVideo user ID IE stored in the list of users in emergency and Location IE different than the stored location of the user, the MCVideo client:

- 1) may update the stored location of the user with the received Location IE;
- 2) shall restart the associated timer TFE1 (Emergency Alert); and
- 3) shall remain in the current state.

[TS 24.281, clause 11.3.3.6]

When in state "E1: Not in emergency state" or in "E2: Emergency state", upon receiving a GROUP EMERGENCY ALERT CANCEL message with the Originating MCVideo user ID IE stored in the list of users in emergency, the MCVideo client:

- 1) shall remove the MCVideo user ID and associated location information from the stored list of users in emergency;
- 2) shall generate a GROUP EMERGENCY ALERT CANCEL ACK message as specified in clause 17.1.17. In the GROUP EMERGENCY ALERT CANCEL ACK message, the MCVideo client:
 - a) shall set the MCVideo group ID IE to the MCVideo group ID IE of the received GROUP EMERGENCY ALERT CANCEL message; and
 - b) shall set the Sending MCVideo user ID IE to own MCVideo user ID; and
 - c) shall set the Originating MCVideo user ID IE to the Originating MCVideo user ID IE of the received GROUP EMERGENCY ALERT message;
- 3) shall send the GROUP EMERGENCY ALERT CANCEL ACK message as specified in clause 9.3.1.1.1;

- 4) shall stop the associated timer TFE1 (Emergency Alert); and
- 5) shall remain in the current state.

7.3.2.3 Test description

7.3.2.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
 - For the underlying "transport bearer" over which the SS and the UE will communicate, the SS is behaving as SS-UE1 as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.
- GNSS simulator to simulate a location and provide a timing reference for the assistance of E-UTRAN off-network testing.

NOTE 1: For operation in off-network environment, it needs be ensured that after the UE is powered up it considers the Geographical area #1 that is simulated by the GNSS simulator as being one of the geographical areas set in the USIM for operation when UE is "not served by E-UTRAN".

- SS-NW (MCVideo server)
 - For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

NOTE 2: The SS operation as NW (MCVideo server) is needed only for the preamble if the UE has to perform procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 37.579-1 [2] clause 5.5.10 is inserted.
- For the underlying "transport bearer" over which the SS and the UE will communicate, the UE is behaving as a ProSe enabled UE as defined in TS 36.508 [24], configured for and operating as ProSe Direct Communication transmitting and receiving device.

Preamble:

- The UE has performed procedure 'MCVideo UE registration' as specified in TS 37.579-1 [2] clause 5.4.2A.
- The UE has performed procedure 'MCX Authorization/Configuration and Key Generation' as specified in TS 37.579-1 [2] clause 5.3.2.
- The GNSS simulator is configured to simulate a location in the centre of Geographical area #1 and provide a timing reference, as defined in TS 36.508 [24] Table 4.11.2-2 scenario #1.
- The UE is switched-off.
- UE States at the end of the preamble
 - The UE is in state 'switched-off'.

7.3.2.3.2 Test procedure sequence

Table 7.3.2.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power up the UE.	-	-	-	-
2	Trigger the UE to reset UTC time and location. NOTE: The UTC time and location reset may be performed by MMI or AT command (+CUTCR).	-	-	-	-
3	Activate the MCVideo Client Application and register User A as the MCVideo User (TS 37.579-5 [5], px_MCX_User_A_username, px_MCX_User_A_password). (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVideo call establishment are described in TS 37.579-1 [2] clause 5.4.10 'MCX CT communication over ProSe direct one-to-many communication out of E-UTRA coverage / Announcing/Discoveree procedure for group member discovery'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
4	SS-UE1 (MCVideo Client) sends a PRIVATE CALL SETUP REQUEST message.	<--	GROUP EMERGENCY ALERT	-	-
5	Check: Does the UE (MCVideo Client) send a GROUP EMERGENCY ALERT ACK message? NOTE: It is expected that the UE shall start timer TFE1 (Emergency Alert).	-->	GROUP EMERGENCY ALERT ACK	1	P
6	Start TFE1 (Emergency Alert) 30 seconds as defined in 37.579-1 [2] Table 5.5.8.1-1.	-	-	-	-
7	Wait for 10 seconds (value of TFE2 (emergency alert retransmission) as defined in 37.579-1 [2] Table 5.5.8.1-1).	-	-	-	-
8	SS-UE1 (MCVideo Client) sends a PRIVATE CALL SETUP REQUEST message.	<--	GROUP EMERGENCY ALERT	-	-
9	Check: Does the UE (MCVideo Client) send a GROUP EMERGENCY ALERT ACK message?	-->	GROUP EMERGENCY ALERT ACK	2	F
10	SS-UE1 (MCVideo Client) sends a PRIVATE CALL SETUP REQUEST message.	<--	GROUP EMERGENCY ALERT CANCEL	-	-
11	Check: Does the UE (MCVideo Client) send a GROUP EMERGENCY ALERT CANCEL message? NOTE: It is expected that the UE shall stop timer TFE1 (Emergency Alert).	-->	GROUP EMERGENCY ALERT CANCEL ACK	3	P
-	EXCEPTION: SS releases the E-UTRA connection. The E-UTRA/EPC actions which are related to the MCVideo call release are described in TS 37.579-1 [2] clause 5.4.7 'MCX communication over ProSe direct one-to-one communication out of E-UTRA coverage - release by the SS'.	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					

7.3.2.3.3 Specific message contents

Table 7.3.2.3.3-1: GROUP EMERGENCY ALERT (steps 4, 8, Table 7.3.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.15.1-1			
Information Element	Value/remark	Comment	Condition
Originating MCVideo user ID	px_MCVideo_ID_User_B		

Table 7.3.2.3.3-2: GROUP EMERGENCY ALERT ACK (steps 5, 9, Table 7.3.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.16.1-1			
Information Element	Value/remark	Comment	Condition
Originating MCVideo user ID	px_MCVideo_ID_User_B		

Table 7.3.2.3.3-3: GROUP EMERGENCY ALERT CANCEL (step 10, Table 7.3.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.17.1-1			
Information Element	Value/remark	Comment	Condition
Originating MCVideo user ID	px_MCVideo_ID_User_B		
Sending MCVideo user ID	px_MCVideo_ID_User_B		

Table 7.3.2.3.3-4: GROUP EMERGENCY ALERT CANCEL ACK (step 11, Table 7.3.2.3.2-1)

Derivation Path: TS 37.579-1 [2], Table 5.5.14.18.1-1			
Information Element	Value/remark	Comment	Condition
Originating MCVideo user ID	px_MCVideo_ID_User_B		
Sending MCVideo user ID	px_MCVideo_ID_User_A		

Annex A (informative): Change history

Change history of TS 36.579-6							
Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New version
2018-08	RAN5#80	R5-184607	-	-	-	Introduction of TS 36.579-6	0.0.2
2018-08	RAN5#80	R5-184990	-	-	-	New Test Case for 36.579-6 - 6.1.1.8	0.0.3
2018-08	RAN5#80	R5-185142	-	-	-	Draft TS 36.579-6 v003	0.0.3
2019-06	RAN5#83	R5-195214	-	-	-	New TC for 36.579-6 - 6.1.1.3 Group Call Manual CO	0.0.4
2019-06	RAN5#83	R5-195215	-	-	-	New TC for 36.579-6 - 6.1.1.4 Group Call Manual CT	0.0.4
2019-06	RAN5#83	R5-194733	-	-	-	Draft TS 36.579-6 v004	0.0.4
2019-09	RAN5#84	R5-196351	-	-	-	Draft TS 36.579-6 v010	0.1.0
2019-11	RAN5#85	R5-198828	-	-	-	Draft TS 36.579-6 v0.2.1	0.2.1
2020-05	RAN5#87	R5-202050	-	-	-	Draft TS 36.579-6 v0.3.0	0.3.0
2020-07	RAN#88	RP-200716	-	-	-	Draft version for information purposes to the RAN Plenary	1.0.0
2020-08	RAN5#88	R5-203528	-	-	-	draft TS 36.579-6 v1.1.0	1.1.0
2020-09	RAN#89	RP-201796	-	-	-	Draft version for approval to move the spec under revision control to the RAN Plenary	2.0.0
2020-09	RAN#89	-	-	-	-	upgraded to v14.0.0 with small editorial changes	14.0.0
2021-03	RAN#91	R5-211269	0002	-	F	Correction to MCVideo Test Case 6.2.6	14.1.0
2021-03	RAN#91	R5-211546	0001	1	F	Correction to MCVideo Test Case 6.1.1.9	14.1.0
2021-06	RAN#92	R5-212357	0005	-	F	Correction to MCVideo Test Case 6.1.1.1	14.2.0
2021-06	RAN#92	R5-212358	0006	-	F	Correction to MCVideo Test Case 6.1.1.2	14.2.0
2021-06	RAN#92	R5-212359	0007	-	F	Correction to MCVideo Test Case 6.1.1.3	14.2.0
2021-06	RAN#92	R5-212360	0008	-	F	Correction to MCVideo Test Case 6.1.1.4	14.2.0
2021-06	RAN#92	R5-212361	0009	-	F	Correction to MCVideo Test Case 6.1.1.5	14.2.0
2021-06	RAN#92	R5-212362	0010	-	F	Correction to MCVideo Test Case 6.1.1.6	14.2.0
2021-06	RAN#92	R5-212363	0011	-	F	Correction to MCVideo Test Case 6.1.1.7	14.2.0
2021-06	RAN#92	R5-212364	0012	-	F	Correction to MCVideo Test Case 6.1.1.8	14.2.0
2021-06	RAN#92	R5-212365	0013	-	F	Correction to MCVideo Test Case 6.1.1.9	14.2.0
2021-06	RAN#92	R5-212366	0014	-	F	Correction to MCVideo Test Case 6.1.1.10	14.2.0
2021-06	RAN#92	R5-212367	0015	-	F	Correction to MCVideo Test Case 6.1.1.11	14.2.0
2021-06	RAN#92	R5-213256	0016	-	F	Addition of new MCVideo test case 6.1.1.12 On-network / On-demand Pre-arranged Group Call / Transmission Control State Transitions / Client Originated (CO)	15.0.0
2021-06	RAN#92	R5-213257	0017	-	F	Addition of new MCVideo test case 6.1.1.13 On-network / On-demand Pre-arranged Group Call / Reception Control State Transitions / Client Terminated (CT)	15.0.0
2021-09	RAN#93	R5-215593	0024	-	F	Correction to MCVideo Test Case 6.2.3	15.1.0
2021-09	RAN#93	R5-215594	0025	-	F	Correction to MCVideo Test Case 6.2.4	15.1.0
2021-09	RAN#93	R5-215595	0026	-	F	Correction to MCVideo Test Case 6.2.5	15.1.0
2021-09	RAN#93	R5-215596	0027	-	F	Correction to MCVideo Test Case 6.2.6	15.1.0
2021-09	RAN#93	R5-215599	0030	-	F	Addition of MCVideo Test Case 6.1.2.5 On-network / On-demand Pre-arranged Group Call / Emergency Group Call / Client Originated (CO)	15.1.0
2021-09	RAN#93	R5-216344	0018	1	F	Correction to MCVideo Test Case 6.1.2.1	15.1.0
2021-09	RAN#93	R5-216345	0019	1	F	Correction to MCVideo Test Case 6.1.2.2	15.1.0
2021-09	RAN#93	R5-216346	0020	1	F	Correction to MCVideo Test Case 6.1.2.3	15.1.0
2021-09	RAN#93	R5-216347	0021	1	F	Correction to MCVideo Test Case 6.1.2.4	15.1.0
2021-09	RAN#93	R5-216348	0022	1	F	Correction to MCVideo Test Case 6.2.1	15.1.0
2021-09	RAN#93	R5-216349	0023	1	F	Correction to MCVideo Test Case 6.2.2	15.1.0
2021-09	RAN#93	R5-216350	0028	1	F	Correction to MCVideo Test Case 6.2.7	15.1.0
2021-09	RAN#93	R5-216351	0029	1	F	Correction to MCVideo Test Case 6.2.8	15.1.0
2022-03	RAN#95	R5-220489	0036	-	F	Correction of MCVideo Test Case 5.1	15.2.0
2022-03	RAN#95	R5-220490	0037	-	F	Correction of MCVideo Test Case 5.2	15.2.0
2022-03	RAN#95	R5-220491	0038	-	F	Correction of MCVideo Test Case 5.3	15.2.0
2022-03	RAN#95	R5-220492	0039	-	F	Correction of MCVideo Test Case 5.4	15.2.0
2022-03	RAN#95	R5-220493	0040	-	F	MCVideo condition clarification	15.2.0
2022-03	RAN#95	R5-221546	0032	1	F	New MCVideo TC 6.4.1 Video Pull	15.2.0
2022-03	RAN#95	R5-221547	0033	1	F	New MCVideo TC 6.5.1 Video Push	15.2.0
2022-03	RAN#95	R5-221548	0034	1	F	New MCVideo TC 6.3.1 Emergency Alert CO	15.2.0
2022-03	RAN#95	R5-221549	0035	1	F	New MCVideo TC 6.7.1 Remote Initiated Ambient Viewing CO	15.2.0
2022-03	RAN#95	R5-221550	0041	1	F	New MCVideo TC 6.7.2 Remote Initiated Ambient Viewing CT	15.2.0
2022-03	RAN#95	R5-221551	0042	1	F	New MCVideo TC Selected Group Change of Targeted User CO	15.2.0
2022-03	RAN#95	R5-221552	0043	1	F	New MCVideo TC Selected Group Change of Targeted User CT	15.2.0
2022-03	RAN#95	R5-221553	0044	1	F	New MCVideo TC Conference Event Package	15.2.0
2022-03	RAN#95	R5-221554	0045	1	F	New MCVideo TC 6.3.2 Emergency Alert CT	15.2.0
2022-03	RAN#95	R5-221555	0046	1	F	New MCVideo TC MBMS	15.2.0
2022-06	RAN#96	R5-222149	0047	-	F	New MCVIDEO OFF-NETWORK TC 7.1.1.1 Off-network Basic Group Call CO	15.3.0
2022-06	RAN#96	R5-222150	0048	-	F	New MCVIDEO OFF-NETWORK TC 7.1.1.2 Off-network Basic Group Call CT	15.3.0
2022-06	RAN#96	R5-222151	0049	-	F	New MCVIDEO OFF-NETWORK TC 7.1.1.3 Off-network Emergency Call CO	15.3.0
2022-06	RAN#96	R5-222152	0050	-	F	New MCVIDEO OFF-NETWORK TC 7.1.1.4 Off-network Emergency Call CT	15.3.0

2022-06	RAN#96	R5-222153	0051	-	F	New MCVIDEO OFF-NETWORK TC 7.1.1.5 Off-network Imminent Peril Call CO	15.3.0
2022-06	RAN#96	R5-222154	0052	-	F	New MCVIDEO OFF-NETWORK TC 7.1.1.6 Off-network Imminent Peril Call CT	15.3.0
2022-06	RAN#96	R5-222155	0053	-	F	New MCVIDEO OFF-NETWORK TC 7.1.2.1 Off-network Broadcast Call CO	15.3.0
2022-06	RAN#96	R5-222156	0054	-	F	New MCVIDEO OFF-NETWORK TC 7.1.2.2 Off-network Broadcast Call CT	15.3.0
2022-06	RAN#96	R5-222157	0055	-	F	New MCVIDEO OFF-NETWORK TC 7.2.1 Off-network Auto Private Call CO	15.3.0
2022-06	RAN#96	R5-222158	0056	-	F	New MCVIDEO OFF-NETWORK TC 7.2.2 Off-network Auto Private Call CT	15.3.0
2022-06	RAN#96	R5-222159	0057	-	F	New MCVIDEO OFF-NETWORK TC 7.2.3 Off-network Manual Private Call CO	15.3.0
2022-06	RAN#96	R5-222160	0058	-	F	New MCVIDEO OFF-NETWORK TC 7.2.4 Off-network Manual Private Call CT	15.3.0
2022-06	RAN#96	R5-222161	0059	-	F	New MCVIDEO OFF-NETWORK TC 7.3.1 Off-network Emergency Alert CO	15.3.0
2022-06	RAN#96	R5-222162	0060	-	F	New MCVIDEO OFF-NETWORK TC 7.3.2 Off-network Emergency Alert CT	15.3.0
2022-06	RAN#96	R5-222370	0061	-	F	Correction of Emergency Alert Test Cases in clause 6.3	15.3.0
2022-06	RAN#96	R5-222371	0062	-	F	Correction of MCVideo Test Cases clause 6.7	15.3.0
2022-06	RAN#96	R5-222372	0063	-	F	Correction of test case 6.1.4.1	15.3.0
2022-06	RAN#96	R5-222373	0064	-	F	Correction of test case 6.1.4.2	15.3.0
2022-06	RAN#96	R5-222374	0065	-	F	Correction of Video Pull Test Cases in clause 6.4	15.3.0
2022-06	RAN#96	R5-222375	0066	-	F	Correction of Video Push Test Cases in clause 6.5	15.3.0
2022-06	RAN#96	R5-222404	0067	-	F	Correction of Group Call Test Cases in clause 6.1	15.3.0
2022-06	RAN#96	R5-223479	0068	1	F	Correction of Private Call Test Cases in clause 6.2	15.3.0
2022-09	RAN#97	R5-223961	0069	-	F	Correction of test cases in clause 6.1.1 - Pre-Arranged Group Call	15.4.0
2022-09	RAN#97	R5-223962	0070	-	F	Correction of test cases in clause 6.1.4 - Remote change of selected group	15.4.0
2022-12	RAN#98	R5-227618	0071	1	F	Correction of clause 6.1.1 - Pre-Arranged Group Call	15.5.0
2022-12	RAN#98	R5-227619	0072	1	F	Correction of clause 6.1.2 - Chat Group Call	15.5.0
2022-12	RAN#98	R5-227620	0073	1	F	Correction of clause 6.1.3 - Subscription to Conference Event Package	15.5.0
2022-12	RAN#98	R5-227621	0074	1	F	Correction of clause 6.2 - Private Calls	15.5.0
2022-12	RAN#98	R5-227622	0075	1	F	Correction of clause 6.3 - Emergency Alert	15.5.0
2022-12	RAN#98	R5-227623	0076	1	F	Correction of clause 6.4 - Video Pull	15.5.0
2022-12	RAN#98	R5-227624	0077	1	F	Correction of clause 6.5 - Video Push	15.5.0
2022-12	RAN#98	R5-227625	0078	1	F	Correction of clause 6.7 - Ambient viewing call	15.5.0
2022-12	RAN#98	R5-227626	0079	1	F	Correction of clause 6.8 - Use of MBMS transmission	15.5.0
2023-03	RAN#99	R5-230151	0085	-	F	Correction of clause 6.3 - Emergency Alert	15.6.0
2023-03	RAN#99	R5-230152	0086	-	F	Correction of clause 6.4 - Video Pull	15.6.0
2023-03	RAN#99	R5-230153	0087	-	F	Correction of clause 6.5 - Video Push	15.6.0
2023-03	RAN#99	R5-230154	0088	-	F	Correction of clause 6.7 - Ambient viewing call	15.6.0
2023-03	RAN#99	R5-232001	0083	1	F	Correction of clause 6.1 - Group Calls	15.6.0
2023-03	RAN#99	R5-232002	0084	1	F	Correction of clause 6.2 - Private Calls	15.6.0
2023-03	RAN#99	R5-232003	0089	1	F	Correction of clause 6.8 - Use of MBMS transmission	15.6.0
2023-03	RAN#99	R5-232004	0090	1	F	Correction of clause 7 - Off-Network Test Scenarios	15.6.0
2023-03	RAN#99	R5-231920	0091	1	F	Additional TC for One-to-one video pull call CT	16.0.0
2023-06	RAN#100	R5-232196	0093	-	F	Correction of test case 6.4.2	16.1.0
2023-06	RAN#100	R5-232222	0094	-	F	Correction of clause 2	16.1.0
2023-06	RAN#100	R5-232223	0095	-	F	Correction of test case 6.3.2	16.1.0
2023-09	RAN#101	R5-233830	0096	-	F	Correction of test case 6.4.2	16.2.0
2023-12	RAN#102	R5-237443	0097	1	F	Addition of new TC 6.7.3 Ambient Viewing - Locally Initiated CO	16.3.0
2023-12	RAN#102	R5-237444	0098	1	F	Addition of new TC 6.7.4 Ambient Viewing - Locally Initiated CT	16.3.0
2024-03	RAN#103	R5-240528	0099	-	F	Correction of testcase 6.7.3	16.4.0
2024-03	RAN#103	R5-240582	0100	-	F	Correction of testcase 6.1.3.1	16.4.0
2024-03	RAN#103	R5-240583	0101	-	F	Correction of testcase 6.7.1	16.4.0
2024-03	RAN#103	R5-240909	0103	-	F	Addition of new TC 6.9.1 Location Information Request	16.4.0
2024-03	RAN#103	R5-240910	0104	-	F	Addition of new TC 6.9.2 Report triggering	16.4.0
2024-03	RAN#103	R5-241595	0105	1	F	Addition of new TC 6.1.1.14 Re-join	16.4.0
2024-03	RAN#103	R5-241596	0102	1	F	Addition of new TC 6.5.2 One-to-server video push call CO	16.4.0
2024-06	RAN#104	R5-242311	0106	-	F	Correction of testcase 6.1.1.14	16.5.0
2024-06	RAN#104	R5-242312	0107	-	F	Correction of testcase 6.9.1	16.5.0
2024-06	RAN#104	R5-242356	0108	-	F	Common correction of test cases in clause 6	16.5.0
2024-06	RAN#104	R5-242357	0109	-	F	Correction of testcase 6.3.1	16.5.0
2024-06	RAN#104	R5-242358	0110	-	F	Correction of testcase 6.3.2	16.5.0
2024-06	RAN#104	R5-243271	0111	-	F	Correction of MCVideo Location TCs	16.5.0

NOTE: The table above will not be further updated in the future. It shows all TS 36.579-6 CRs taken over into TS 37.579-6 v0.0.1.

Change history of TS 37.579-6							
Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New version
2024-11	RAN5#105	R5-247093	-	-	-	TS 36.579-6 v16.5.0 content was transferred into this new TS 37.579-6 as by definition 36 series specifications cover LTE only aspects and multi-RAT aspects need to be covered in 37 series specifications. The only changes, compared to TS 36.579-6 v16.5.0, are: - "over LTE" has been removed from the TS title as beginning with Rel-17 the present document needs to cover also NR/5GC. - the Introduction clause has been removed and contents moved into the Foreword clause. - every instance of 36.579 has been replaced by 37.579, except in the Change history table of TS 36.579-6. - every instance of 36.579-3 has been either deleted or voided. - the CR history table of TS 36.579-6 was kept for easier reference of all changes included in TS 36.579-6, but a new Change history table was added for TS 37.579-6. - the 3GPP TS-TR template version 1.18.1 has been used.	0.0.1
2024-11	RAN5#105	R5-247098	-	-	-	RAN5 agreed 0.1.0 version	0.1.0
2024-12	RAN#106	RP-242646	-	-	-	For one-step approval at RAN#106	1.0.0
2024-12	RAN#106	-	-	-	-	raised to v17.0.0 with no change	17.0.0

History

Document history		
V17.0.0	February 2025	Publication