



**Mission Critical (MC) services;
Mission Critical Video (MCVideo) Application Server (AS)
Protocol conformance specification for
server-to-client interface;
Part 1: Test structure, configurations, conformance
requirement and test purposes**

Reference

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee TETRA and Critical Communications Evolution (TCCE).

The present document is based on the 3GPP TS 36.579-8 [i.8] produced by the 3rd Generation Partnership Project (3GPP).

The present document is part 1 of a multi-part deliverable covering the Mission Critical (MC) services; Mission Critical Video (MCVideo) Application Server (AS) Protocol conformance specification for server-to-client interface, as identified below:

Part 1: "Test structure, configurations, conformance requirement and test purposes";

Part 2: "Test Applicability and Implementation Conformance Statement (ICS) pro forma specification".

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).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

The ETSI Technical Specification used as the reference document for the present document is part 8 of a multi-part deliverable covering conformance test specification for Mission Critical Services over LTE consisting of:

- ETSI TS 136 579-1 [1]: "LTE; Mission Critical (MC) services over LTE; Part 1: Common test environment (3GPP TS 36.579-1)";
- ETSI TS 136 579-2 [i.4]: "LTE; Mission Critical (MC) services over LTE; Part 2: Mission Critical Push To Talk (MCPTT) User Equipment (UE) Protocol conformance specification (3GPP TS 36.579-2)";
- ETSI TS 136 579-3 [i.2]: "LTE; Mission Critical (MC) services over LTE; Part 3: Mission Critical Push To Talk (MCPTT) Server Application conformance specification (3GPP TS 36.579-3)";
- ETSI TS 136 579-4 [2]: "LTE; Mission Critical (MC) services over LTE; Part 4: Test Applicability and Implementation Conformance Statement (ICS) proforma specification (3GPP TS 36.579-4)";
- ETSI TS 136 579-5 [i.3]: "LTE; Mission Critical (MC) services over LTE; Part 5: Abstract test suite (ATS) (3GPP TS 36.579-5)";
- ETSI TS 136 579-6 [i.5]: "LTE; Mission Critical (MC) services over LTE; Part 6: Mission Critical Video (MCVideo) User Equipment (UE) Protocol conformance specification (3GPP TS 36.579-6)";
- ETSI TS 136 579-7 [i.6]: "LTE; Mission Critical (MC) services over LTE; Part 7: Mission Critical Data (MCData) User Equipment (UE) Protocol conformance specification (3GPP TS 36.579-7)";
- **3GPP TS 36.579-8 [i.8]: "Mission Critical (MC) services over LTE; Part 8: Mission Critical Video (MCVideo) Server Application conformance specification";**
- 3GPP TS 36.579-9 [i.7]: "Mission Critical (MC) services over LTE; Part 9: Mission Critical Data (MCData) Server Application conformance specification".

1 Scope

The present document specifies the protocol conformance testing for testing a MCVideo Server for compliance to the Mission Critical Video (MCVideo) over LTE protocol requirements defined by 3GPP. The present document addresses only MCVideo Server-Client communication scenarios. It does not cover e.g. MCVideo Server-EPS, MCVideo Server-SIP Core, etc. scenarios which involve interfaces which implementation may widely vary.

In particular the present specification 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 Servers implemented according to 3GPP releases starting from Release 14 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 ETSI TS 136 579-1 [1] (3GPP TS 36.579-1);
- Implementation Conformance Statement (ICS) ETSI TS 136 579-4 [2] (3GPP TS 36.579-4) and Implementation extra Information for Testing (IXIT) ETSI TS 136 579-5 [i.3] (3GPP TS 36.579-5);
- the applicability of each test case ETSI TS 136 579-4 [2] (3GPP TS 36.579-4).

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 Server. The specification of such testing is out of the scope of RAN5.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found in the [ETSI docbox](#).

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents are necessary for the application of the present document.

- [1] [ETSI TS 136 579-1](#): "LTE; Mission Critical (MC) services over LTE; Part 1: Common test environment (3GPP TS 36.579-1)".
- [2] [ETSI TS 136 579-4](#): "LTE; Mission Critical (MC) services over LTE; Part 4: Test Applicability and Implementation Conformance Statement (ICS) proforma specification (3GPP TS 36.579-4)".
- [3] [ETSI TS 124 379](#): "LTE; Mission Critical Push To Talk (MCPTT) call control; Protocol specification (3GPP TS 24.379)".

- [4] [ETSI TS 136 509](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Special conformance testing functions for User Equipment (UE) (3GPP TS 36.509)".
- [5] [ETSI TS 136 508](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Common test environments for User Equipment (UE) conformance testing (3GPP TS 36.508)".
- [6] [ETSI TS 133 310](#): "Universal Mobile Telecommunications System (UMTS); LTE; 5G; Network Domain Security (NDS); Authentication Framework (AF) (3GPP TS 33.310)".
- [7] [ETSI TS 133 180](#): "LTE; Security of the Mission Critical (MC) service (3GPP TS 33.180)".
- [8] [ETSI TS 124 281](#): "LTE; Mission Critical Video (MCVideo) signalling control; Protocol specification (3GPP TS 24.281)".
- [9] [ETSI TS 124 581](#): "LTE; Mission Critical Video (MCVideo) media plane control; Protocol specification (3GPP TS 24.581)".
- [10] [IETF RFC 3261 \(June 2002\)](#): "SIP: Session Initiation Protocol".
- [11] [IETF RFC 4028 \(April 2005\)](#): "Session Timers in the Session Initiation Protocol (SIP)".
- [12] [IETF RFC 2854 \(June 2000\)](#): "The 'text/html' Media Type".
- [13] [W3C® Recommendation 24 December 1999](#): "HTML 4.01 Specification".
- [14] [IETF RFC 6665 \(July 2012\)](#): "SIP-Specific Event Notification".
- [15] [ETSI TS 126 114](#): "Universal Mobile Telecommunications System (UMTS); LTE; 5G; IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction (3GPP TS 26.114)".
- [16] [IETF RFC 486 \(April 2007\)](#): "RTP Payload Format and File Storage Format for the Adaptive Multi-Rate (AMR) and Adaptive Multi-Rate Wideband (AMR-WB) Audio Codecs".
- [17] [IETF RFC 6335 \(August 2011\)](#): "Internet Assigned Numbers Authority (IANA) Procedures for the Management of the Service Name and Transport Protocol Port Number Registry".
- [18] [IETF RFC 3556 \(July 2003\)](#): "Session Description Protocol (SDP) Bandwidth Modifiers for RTP Control Protocol (RTCP) Bandwidth".
- [19] [IETF RFC 4412 \(February 2006\)](#): "Communications Resource Priority for the Session Initiation Protocol (SIP)".
- [20] [IETF RFC 8101 \(March 2017\)](#): "IANA Registration of New Session Initiation Protocol (SIP) Resource-Priority Namespace for Mission Critical Push To Talk service".
- [21] [IETF RFC 7134 \(March 2014\)](#): "The Management Policy of the Resource Priority Header (RPH) Registry Changed to "IETF Review"".
- [22] [IETF RFC 5621 \(September 2009\)](#): "Message Body Handling in the Session Initiation Protocol (SIP)".
- [23] [IETF RFC 3903 \(October 2004\)](#): "Session Initiation Protocol (SIP) Extension for Event State Publication".
- [24] [IETF RFC 6184 \(May 2011\)](#): "RTP Payload Format for H.264 Video".
- [25] [IETF RFC 3550 \(July 2003\)](#): "RTP: A Transport Protocol for Real-Time Applications".
- [26] [ETSI TS 123 003](#): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Numbering, addressing and identification (3GPP TS 23.003)".
- [27] [ETSI TS 124 482](#): "LTE; Mission Critical Services (MCS) identity management; Protocol specification (3GPP TS 24.482)".

- [28] [ETSI TS 124 484](#): "LTE; Mission Critical Services (MCS) configuration management; Protocol specification (3GPP TS 24.484)".
- [29] [ETSI TS 124 481](#): "LTE; Mission Critical Services (MCS) group management; Protocol specification (3GPP TS 24.481)".
- [30] [ETSI TS 124 282](#): "LTE; Mission Critical Data (MCDData) signalling control; Protocol specification (3GPP TS 24.282)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents may be useful in implementing an ETSI deliverable or add to the reader's understanding, but are not required for conformance to the present document.

- [i.1] ETSI TR 121 905: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Vocabulary for 3GPP Specifications (3GPP TR 21.905)".
- [i.2] [ETSI TS 136 579-3](#): "LTE; Mission Critical (MC) services over LTE; Part 3: Mission Critical Push To Talk (MCPTT) Server Application conformance specification (3GPP TS 36.579-3)".
- [i.3] [ETSI TS 136 579-5](#): "LTE; Mission Critical (MC) services over LTE; Part 5: Abstract test suite (ATS) (3GPP TS 36.579-5)".
- [i.4] [ETSI TS 136 579-2](#): "LTE; Mission Critical (MC) services over LTE; Part 2: Mission Critical Push To Talk (MCPTT) User Equipment (UE) Protocol conformance specification (3GPP TS 36.579-2)".
- [i.5] [ETSI TS 136 579-6](#): "LTE; Mission Critical (MC) services over LTE; Part 6: Mission Critical Video (MCVideo) User Equipment (UE) Protocol conformance specification (3GPP TS 36.579-6)".
- [i.6] [ETSI TS 136 579-7](#): "LTE; Mission Critical (MC) services over LTE; Part 7: Mission Critical Data (MCDData) User Equipment (UE) Protocol conformance specification (3GPP TS 36.579-7)".
- [i.7] 3GPP TS 36.579-9: "Mission Critical (MC) services over LTE; Part 9: Mission Critical Data (MCDData) Server Application conformance specification".
- [i.8] 3GPP TS 36.579-8: "Mission Critical (MC) services over LTE; Part 8: Mission Critical Video (MCVideo) Server Application conformance specification".

3 Definitions of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI TR 121 905 [i.1] (3GPP TR 21.905) and the following apply:

NOTE: A term defined in the present document takes precedence over the definition of the same term, if any, in ETSI TR 121 905 [i.1] (3GPP TR 21.905).

For the purpose of the present document, the following terms and definitions given in ETSI TS 124 281 [8] (3GPP TS 24.281) 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 given in ETSI TS 133 180 [7] (3GPP TS 33.180) 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 ETSI TR 121 905 [i.1] (3GPP TR 21.905) and the following apply:

NOTE: An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in ETSI TR 121 905 [i.1] (3GPP TR 21.905).

CSK	Client-Server Key
ECGI	E-UTRAN Cell Global Identification
E-UTRA	Evolved UMTS Terrestrial Radio Access
FEC	Forward Error Correction
GKTP	Group Key Transport Payload
GMK	Group Management Key
GMOP	Group Management OPERATION
ICS	Implementation Conformance Statement
IMPU	IMS Public User Identity
IUT	Implementation Under Test
IXIT	Implementation eXtra Information for Testing
MBMS	Multimedia Broadcast and Multicast Service
MC	Mission Critical
MCDATA	Mission Critical Data
MCPTT	Mission Critical Push To Talk
MCS	Mission Critical Service
MCVideo group ID	MCVideo group Identity
MCVideo	Mission Critical Video
MIME	Multipurpose Internet Mail Extensions
MKI	Master Key identifier
MVEA	MCVideo Emergency Alert
MVEG	MCVideo Emergency Group
MVEGC	MCVideo Emergency Group Call
MVIG	MCVideo Imminent peril Group
MVIGC	MCVideo Imminent peril Group Call
NAT	Network Address Translation
OIDC	OpenID Connect
PCK	Private Call Key
PIDF	Presence Information Data Format
PLMN	Public Land Mobile Network
QCI	QoS Class Identifier
RTP	Real-time Transport Protocol
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	Test Purpose
TP	Transmission Point
UE	User Equipment
URI	Uniform Resource Identifier
XCAP	XML Access Configuration Protocol
XDMC	XML Document Management Client
XPk	XML Protection Key
XUI	XCAP Unique Identifier

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 Server supplier (to use the Implementation Conformance Statement (ICS) proforma specified in ETSI TS 136 579-4 [2] (3GPP TS 36.579-4)) is used to determine whether an optional function/procedure has been implemented.

4.1.2 Test interfaces and facilities

Detailed descriptions of the MCVideo test interfaces and special facilities for testing are provided in ETSI TS 136 509 [4] (3GPP TS 36.509).

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 ETSI TS 136 579-4 [2] (3GPP TS 36.579-4), 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 ETSI TS 136 579-1 [1] (3GPP TS 36.579-1). Where a test requires an environment that is different, this will be specified in the test itself.

For all test cases in the present 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 ETSI TS 136 579-1 [1] (3GPP TS 36.579-1). These procedures will be used in numerous test cases throughout the present document.

5 MCVideo Server - MCVideo Client Configuration

5.1 MCVIDEO Server - MCVIDEO Client / Configuration / Authentication / User Authorisation / UE Configuration / User Profile / Key generation

5.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo Client) activates an MCVideo application and requests MCVideo
initialisation }
  then { IUT (MCVideo Server) provides the initial UE configuration and performs MCVideo User
Authentication and provides id_token, access_token and refresh token to the successfully
authenticated user }
}
```

(2)

```
with { IUT (MCVideo Server) having authenticated the SS-UE1 (MCVideo Client) }
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates key management authorization }
  then { IUT (MCVideo Server) provides identity management key material }
}
```

(3)

```
with { IUT (MCVideo Server) having provided identity management key material }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests user service authorization }
  then { IUT (MCVideo Server) responds to the SS-UE1 (MCVideo Client) with SIP 200 (OK) messages }
}
```

(4)

```
with { IUT (MCVideo Server) having provided service authorization }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests configuration management authorization }
  then { IUT (MCVideo Server) responds to the SIP SUBSCRIBE message with a SIP 200 (OK) message
and sends a SIP NOTIFY message containing the XCAP-URI of the documents and sends the MCVideo UE
Configuration Document and MCVideo User Profile Configuration Document MCVideo Service Configuration
Document via HTTP 200 (OK) messages in response to HTTP GET requests }
}
```

(5)

```
with { IUT (MCVideo Server) having provided user configuration data }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests group management authorization }
  then { IUT (MCVideo Server) responds to the SS-UE1 (MCVideo Client) with SIP 200 (OK) messages
and sends the XCAP-URI of the Group documents via a SIP NOTIFY message and sends the Group Document
MCVideo UE Configuration document' via a HTTP 200 (OK) message in response to a HTTP GET request and
sends the group key transport payloads (GKTP) document via a SIP NOTIFY message }
}
```

(6)

```

with { IUT (MCVideo Server) having provided all required configuration data }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests to refresh its service settings }
  then { IUT (MCVideo Server) responds to the SS-UE1 (MCVideo Client) with a SIP 200 (OK) message }
}

```

5.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: ETSI TS 124 482 [27] (3GPP TS 24.482), clauses 6.3.1, A.2.1.3, A.2.3, ETSI TS 124 484 [28] (3GPP TS 24.484), clauses 4.3.1, 4.3.3, 4.4, 6.2.3, 6.2.4.1, 6.3.1.2, 6.3.2.3, 6.3.13.3.2.2, 6.3.13.3.2.3, 9.2.1, 9.2.1A, 9.3.1, 9.3.1A, 9.4.1, ETSI TS 124 481 [29] (3GPP TS 24.481) clauses 5.4, 5.2A, 6.2.4, 6.3.3.3, 6.3.13.3.2.2, 6.3.13.3.3, 7.2.12.1, ETSI TS 124 281 [8] (3GPP TS 24.281) clauses 7.3.1, 7.3.1A, 7.3.2, 7.3.3, 7.3.4, 7.3.5, 7.3.6.1, 7.3.6.2, and ETSI TS 133 180 [7] (3GPP TS 33.180), clauses 5.1.1, 5.1.3.1, 5.2.2, 5.3.5, 5.3.6, 5.8.1, 9.2.1. Unless otherwise stated these are Rel-14 requirements.

[ETSI TS 124 482 [27] (3GPP TS 24.482), clause 6.3.1]

"Upon receipt of an OIDC Authentication Request message as specified in the OpenID Connect 1.0 [6] and IETF RFC 6749 [5] via a secure TLS tunnel between the identity management client and the authorisation endpoint of the IdM server, the IdM server:

- 1) *shall validate the received OIDC Authentication Request message as specified in the OpenID Connect 1.0 [6] and IETF RFC 6749 [5];*
- 2) *shall generate an HTTP 200 (OK) response according to IETF RFC 2616 [4] including form data to prompt the MC service user for their username and password credentials; and*

NOTE 1: The username will be the MC service user's MC ID.

- 3) *shall send the HTTP 200 (OK) response towards the IdM client.*

Upon receipt of an HTTP POST request method from the IdM client containing the MC service user's username and password, the IdM server authenticates the MC service user and:

NOTE 2: Other methods of authentication can be used by the MC service provider 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 for MC services, hence a procedure to realize that method is included here.

- 1) *shall generate an OIDC Authentication Response message as specified in OpenID Connect 1.0 [6] and IETF RFC 6749 [5] with the following clarifications:*
 - a) *shall generate an HTTP 302 (FOUND) response according to IETF RFC 2616 [4]; and*
 - b) *shall include the required parameters including the authorization_code as specified in 3GPP TS 33.180 [17] in the query component of the redirection URI contained in the Location header field of the HTTP FOUND request method using the "application/x-www-form-urlencoded" format as specified in W3C.REC-html401-19991224 [7]; and*
- 2) *shall send the HTTP 302 (FOUND) response towards the IdM client.*

Upon receipt of an OIDC Token Request message via a secure TLS tunnel established between the identity management client and the token endpoint of the IdM server, the IdM server:

- 1) *shall validate the OIDC Token Request message and if valid shall generate an OIDC Token Response message as specified in OpenID Connect 1.0 [6] and IETF RFC 6749 [5] with the following clarifications:*
 - a) *shall generate an HTTP 200 (OK) response according to IETF RFC 2616 [4];*
 - b) *shall based on the received MC ID obtained from the received user authentication credentials, determine the MC service ID of the MC service user;*
 - c) *shall include an id_token, access_token and refresh_token and MC service ID as specified in 3GPP TS 33.180 [17]; and*

- d) shall include the other required parameters as specified in OpenID Connect 1.0 [6] and IETF RFC 6749 [5]; and

2) shall send the HTTP 200 (OK) response towards the IdM client."

[ETSI TS 124 482 [27] (3GPP TS 24.482), clause A.2.1.3]

"The HTTP client in the network entity is configured with the following parameters:

- 1) a home HTTP proxy FQDN; and
- 2) a home HTTP proxy port.

The HTTP client in the network entity shall send and receive all HTTP messages via the home HTTP proxy.

The HTTP client in the network entity shall insert an X-3GPP-Asserted-Identity header field as specified in 3GPP TS 24.109 [15] in the HTTP request and shall set X-3GPP-Asserted-Identity header field to the identity of the HTTP client in the network entity. The identity of the HTTP client in the network entity can be a public service identity, an MC service group ID, or an MC service ID."

[ETSI TS 124 482 [27] (3GPP TS 24.482), Annex A.2.3]

"The HTTP server shall support the server role of IETF RFC 2616 [4].

Upon reception of an HTTP request:

- 1) if the received HTTP request does not contain an Authorization header field with the "Bearer" authentication scheme and a bearer access token as specified in IETF RFC 6750 [14] and the received HTTP request does not contain an X-3GPP-Asserted-Identity header field as specified in 3GPP TS 24.109 [15], the HTTP server shall reject the request with HTTP 403 (Forbidden) response;
- 2) if the received HTTP request contains an Authorization header field with the "Bearer" authentication scheme and a bearer access token as specified in IETF RFC 6750 [14];
 - a) the HTTP server shall validate the bearer access token as specified in IETF RFC 6750 [14]; and
 - b) the HTTP server shall consider the MC service ID derived from the bearer access token as the identity of the sender of the HTTP request; and
- 3) if the received HTTP request does not contain an Authorization header field with the "Bearer" authentication scheme and a bearer access token as specified in IETF RFC 6750 [14] and the received HTTP request contains an X-3GPP-Asserted-Identity header field as specified in 3GPP TS 24.109 [15], the HTTP server shall consider the URI in the X-3GPP-Asserted-Identity header field as the identity of the sender of the HTTP request."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 4.3.1]

"The MCS server obtains the appropriate MCS service configuration document that contains the mission critical organisation configured parameters that defined the behaviour of the MCS from the configuration management server.

The MCS server obtains the MCS service configuration document that contains the mission critical organisation configured parameters that defined the behaviour of the MCS from the configuration management server.

The MCS server subscribes to the MCS service configuration document for each mission critical organisation that is provisioned that is supported by the MCS server using the procedure specified in subclause 6.3.13.2.3. How the MCS server is provisioned with the identities of the mission critical organisations is out of scope of the present document.

If the MCS service configuration document has been updated since the current version stored at the MCS server, then the MCS server will receive a SIP NOTIFY request containing an HTTPS URI of the MCS service configuration document. Retrieval by the MCS server, using the notified HTTPS URI, of the MCS service configuration document is performed as specified in subclause 6.3.3.2.3.

NOTE: The MCS server can be notified of changes to the MCS service management configuration document at any time while operating the MCS."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 4.3.3]

"The format of the MCDATA service configuration document downloaded to the MCDATA server is defined in subclause 9.4."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 4.4]

"The following applies to the configuration management server used for online configuration."

The configuration management server needs to convert the MCS UE initial configuration document received from an MCS administrator into an appropriate format for configuration of the MCS UE initial configuration MO.

If the MCS UE initial configuration MO contains a <default-user-profile> element that identifies an MCS user profile configuration document, the configuration management server needs to convert the identified MCS user profile configuration document received from an MCS administrator into an appropriate format for configuration of the MCS user profile configuration MO.

Once an MCS User Profile configuration document has been created or updated by the MCS UE, the configuration management server uses the procedures specified in 3GPP TS 29.283 [7] to store MCS user profile configuration document as the user profile in the MC service user database.

In order to download the MCS user profile configuration document to an MCS UE or to support an MCS UE updating the MCS user profile configuration document, the configuration management server uses the procedures specified in 3GPP TS 29.283 [7] to obtain the MCS user profile from the MC service user database.

In order to be notified of changes to an MCS user profile configuration document(s) that have been subscribed to by an MCS UE, the configuration management server uses the procedures specified in 3GPP TS 29.283 [7] to be notified of changes to the MCS user profile stored in the MC service user database.

In order to delete the MCS user profile when requested by an MCS UE, the configuration management server uses the procedures specified in 3GPP TS 29.283 [7] to delete the MCS user profile from the MC service user database.

NOTE: The configuration management server and group management server functionality for offline configuration is out of scope of the present document."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 6.2.3]

"The MCS server shall send the HTTP request as specified for the HTTP client in the network entity in annex A of 3GPP TS 24.482 [6]."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 6.2.4.1]

"The CMS shall handle the HTTP request as specified for the HTTP server in annex A of 3GPP TS 24.482 [6]."

The CMS shall be configured with an authorized MCS server list, containing public service identities of MCS servers of the MCS provider of the CMS.

When handling an HTTP request, the CMS shall determine the identity of the sender of the HTTP request as specified in 3GPP TS 24.482 [6], and shall use the identity of the sender of the HTTP request as an authenticated identity when performing the authorization.

The CMS shall handle SIP requests and SIP responses as specified in 3GPP TS 24.229 [22]."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 6.3.1.2]

"A CMS shall support subclause 6.2.1 "Document Management", and subclause 6.2.4 "Access Permissions" of OMA-OMA-TS-XDM_Core-V2_1 [2] and subclause 6.3.13.3 for accepting subscriptions to configuration management documents."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 6.3.2.3]

"A CMS shall support receiving XML documents of the application usages according to procedures specified in IETF RFC 4825 [14] "PUT Handling" where the Request-URI of the HTTP PUT request identifies an XML document and include the "auid" as per the appropriate application usage in clause 7."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 6.3.13.3.2.2]

"Upon reception of an initial SIP SUBSCRIBE request:

- a) *with the Event header field set to xcap-diff;*
- b) *with the Request-URI set to own public service identity for performing subscription proxy function of the CMS;*
- c) *with a P-Asserted-Identity header field not containing an identity listed in the authorized MCPTT server list specified in subclause 6.2.4;*
- d) *with an application/vnd.3gpp.mcptt-info+xml MIME body containing the <mcptt-access-token> element;*
- e) *with an application/resource-lists+xml MIME body; and*
- f) *with the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24 229 [12]), in a P-Asserted-Service header field according to IETF RFC 6050 [23];*

the CMS:

- a) *if an <EncryptedData> XML tag is included in the application/vnd.3gpp.mcptt-info+xml MIME body and the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/vnd.3gpp.mcptt-info+xml MIME body;*
- b) *if an <EncryptedData> XML tag is included in the application/resource-lists+xml MIME body and the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/resource-lists+xml MIME body;*
- c) *shall identify the originating MCPTT ID from <mcptt-access-token> element received in the application/vnd.3gpp.mcptt-info+xml MIME body and shall use the originating MCPTT ID as an authenticated identity when performing the authorization;*
- d) *if the authenticated identity is not authorized to subscribe to notification of changes of any resource in the application/resource-lists+xml MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps;*
- e) *act as a notifier according to IETF RFC 5875 [11]. Additionally, if an XCAP URI in the "uri" attribute of the <entry> element of the application/resource-lists+xml MIME body of the initial SIP SUBSCRIBE request contains an "auid" parameter set to an application usage identifying a configuration management document as described in clause 7;*

shall return the XCAP URI identifying the configuration management document in SIP NOTIFY requests associated with a subscription created as result of the received initial SIP SUBSCRIBE request.

Upon sending a SIP NOTIFY request associated with a subscription created as result of the received initial SIP SUBSCRIBE request, if the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, the CMS shall perform the confidentiality protection procedures and integrity protection procedures defined in 3GPP TS 24.379 [9] for MCPTT server.

Upon reception of a SIP re-SUBSCRIBE request:

- a) *with the Event header field set to xcap-diff; and*
- b) *with an application/resource-lists+xml MIME body;*

the CMS:

- a) *if an <EncryptedData> XML tag is included in the application/resource-lists+xml MIME body of the received SIP re-SUBSCRIBE request and the CSK was received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/resource-lists+xml MIME body; and*

- b) act as a notifier according to IETF RFC 5875 [11]. Additionally, if an XCAP URI in the "uri" attribute of the <entry> element of the application/resource-lists+xml MIME body of the SIP re-SUBSCRIBE request contains an "auid" parameter set to an application usage identifying a configuration management document as described in clause 7:

and for which there is no related subscription established according to the subclause 6.3.13.3.2.3, shall return the XCAP URI identifying the configuration management document in SIP NOTIFY requests associated with a subscription created as result of the received initial SIP SUBSCRIBE request."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 6.3.13.3.2.3]

"Upon reception of an initial SIP SUBSCRIBE request:

- a) with the Event header field set to xcap-diff;
- b) with the Request-URI having the base URI equal to the XCAP root URI of the CMS;
- c) with a P-Asserted-Identity header field containing an identity listed in the authorized MCS server list specified in subclause 6.2.4; and
- d) with the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24 229 [12]), in a P-Asserted-Service header field according to IETF RFC 6050 [23];

the CMS shall act as a notifier according to IETF RFC 5875 [11].

Upon reception of a SIP re-SUBSCRIBE request with the Event header field set to xcap-diff, the CMS:

- a) if the <mcptt-calling-user-id> element is included in the application/vnd.3gpp.mcptt-info+xml MIME body:
 - 1) shall use the <mcptt-calling-user-id> element value as an authenticated identity when performing the authorization; and
 - 2) if the authenticated identity is not authorized to subscribe to notification of changes of any document, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps;
- b) if the authenticated identity is not authorized to subscribe to notification of changes of any document, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps; and
- c) shall act as a notifier according to IETF RFC 5875 [11]."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 9.2.1]

"The MCVideo UE configuration document is specified in this subclause. The MCVideo UE configuration document content is based on requirements of Annex A.2 of 3GPP TS 23.281 [27], in accordance with OMA OMA-TS-XDM_Core-V2_1-20120403-A [2]. The usage of an MCVideo UE configuration document in the MCVideo service is described in 3GPP TS 24.281 [28] and 3GPP TS 24.581 [29]. The schema definition is provided in subclause 9.2.2.3. An MCVideo UE configuration document may apply to all MCVideo UEs of a mission critical organization or apply to specific MCVideo UEs identified in the <mcvideo-UE-id> element. If there is no <mcvideo-UE-id> element in the MCVideo UE configuration document, then by default the MCVideo UE configuration document applies to all MCVideo UEs of the mission critical organization that are not specifically identified in the <mcvideo-UE-id> element of another MCVideo UE configuration document of the mission critical organization. Each MCVideo UE of a mission critical organization is configured with an MCVideo UE configuration document that is identified by the instance ID of the MCVideo UE.

MCVideo UE configuration documents of a MCVideo user are contained as "XDM collections" in the user's directory of the users tree, in accordance with OMA OMA-TS-XDM_Core-V2_1-20120403-A [2]. In this case, the term "user" in the XCAP sense refers to the MCVideo ID, as the user has been already authenticated. A MCVideo UE configuration document corresponding to a specific MCVideo UE the MCVideo user has used to authenticate and is authorised to use the MCVideo service with is placed in the user directory of the MCVideo user.

The MCVideo UE configuration document acts as a template for the CMS to generate UE configuration documents that are downloaded to specific MCVideo UEs. The MCVideo UE configuration document that acts as a template is referred to as a "master MCVideo UE configuration document". The master MCVideo UE configuration document is stored in the users tree of that MCVideo system administrator. The master MCVideo UE configuration document does not directly apply to a specific MCVideo UE, but instead acts as template that the CMS uses to populate the MCVideo UE configuration documents of MCVideo UEs identified by elements of the <MCVideo-UE-id> element. For MCVideo UE configuration documents that correspond to a specific MCVideo UE, the name of the MCVideo UE configuration document is created from a value defined by the corresponding element that identifies the MCVideo UE within the <MCVideo-UE-id> element. For a master MCVideo UE configuration documents that does not contain a <MCVideo-UE-id> element, the name of the MCVideo UE configuration document stored in the user directory is "DEFAULT-MCVideo-UE.xml".

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 9.2.1A]

"The MCVideo UE configuration document is accessed using the same XCAP URI, regardless of whether the MCVideo UE has a specific MCVideo UE configuration document configured or the master MCVideo UE configuration document applies. The CMS shall generate the UE's MCVideo UE configuration document from the master MCVideo UE configuration document if the MCVideo administrator did not provision a specific MCVideo UE configuration document. In this generated document, the <MCVideo-UE-id> element shall be set to the MCVideo client's UE ID. The UE's MCVideo UE configuration document shall always be stored with the filename corresponding to the UE's MCVideo UE ID under the user's directory in the users tree.

The XCAP URI used by the MCVideo client to access the UE's MCVideo UE configuration document shall be:

CMSXCAPROOTURI/org.3gpp.mcvideo.ue-config/users/sip:MCVIDEOID/MCSUEID."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 9.3.1]

"The MCVideo user profile configuration document is specified in this subclause. The MCVideo user profile configuration document content is based on requirements of Annex A.3 of 3GPP TS 23.281 [27], and structure and procedures of OMA OMA-TS-XDM_Core-V2_1-20120403-A [2]. In this case, the term "user" in the XCAP sense refers to the MCVideo ID, as the user has been already authenticated. The usage of an MCVideo user profile in the MCVideo service is described in 3GPP TS 24.281 [28]. The schema definition is provided in subclause 9.3.2.

MCVideo user profile documents are "XDM collections" in the user's directory of the users tree, in accordance with OMA OMA-TS-XDM_Core-V2_1-20120403-A [2].

The name of the MCVideo user profile document matches the value of the <ProfileName> element in the MCVideo user profile document."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 9.3.1A]

"The XCAP URI used by the MCVideo client to access the MCVideo user's MCVideo user profile documents shall be:

CMSXCAPROOTURI/org.3gpp.mcvideo.user-profile/users/sip:MCVIDEOID/mcvideo-user-profile-INDEX.xml

Where INDEX is the index of the MCVideo user profile as defined in subclause 9.3.2.8."

[ETSI TS 124 484 [28] (3GPP TS 24.484), clause 9.4.1]

"The MCVideo service configuration document is specified in this subclause. The MCVideo service configuration document content is based on requirements of Annex A.5 of 3GPP TS 23.281 [27], and structure and procedures of OMA OMA-TS-XDM_Core-V2_1-20120403-A [2]. The usage of an MCVideo service configuration in the MCVideo service is described in 3GPP TS 24.281 [28] and 3GPP TS 24.581 [29]. The schema definition is provided in subclause 9.4.2.3. Each mission critical organization is configured with an MCVideo service configuration document."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 5.4]

"To be compliant with the procedures in the present document, an MCVideo server shall support role of an MCS server as specified in subclause 5.2A."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 5.2A]

"To be compliant with the procedures in the present document, an MCS server:

- *shall support the role of XCAP client as specified in IETF RFC 4825 [22];*
- *shall support the role of XDMC as specified in OMA OMA-TS-XDM_Group-V1_1_1 [3];*
- *shall support the procedure in subclause 6.2.4;*
- *shall support the procedure in subclause 6.3.3.2.3; and*
- *shall support the procedure in subclause 6.3.13.2.2."*

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.2.4]

"The MCS server shall send the HTTP request as specified for the HTTP client in the network entity in annex A of 3GPP TS 24.482 [10].

The MCS server shall perform the procedures in subclause 6.2.2 specified for GC."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.3.3.3]

"A GMS shall support handling an HTTP GET request from a GMC according to procedures specified in IETF RFC 4825 [22] "GET Handling" where the Request-URI of the HTTP GET request identifies an XML document of the application usage specified in subclause 7.2."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.3.13.3.2.2]

"Upon reception of an initial SIP SUBSCRIBE request:

- a) *with the Event header field set to xcap-diff;*
- b) *with the Request-URI set to own public service identity for performing subscription proxy function of the GMS;*
- c) *with a P-Asserted-Identity header field not containing an identity listed in the authorized MCS server list specified in subclause 6.2.5.1 and not containing an identity listed in the authorized GMS list as specified in subclause 6.2.5.1;*
- d) *with an application/vnd.3gpp.mcptt-info+xml MIME body containing the <mcptt-access-token> element;*
- e) *with an application/resource-lists+xml MIME body; and*
- f) *with the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24 229 [12]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];*

the GMS:

- a) *if an <EncryptedData> XML tag is included in the application/vnd.3gpp.mcptt-info+xml MIME body and the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/vnd.3gpp.mcptt-info+xml MIME body;*
- b) *if an <EncryptedData> XML tag is included in the application/resource-lists+xml MIME body and the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/resource-lists+xml MIME body;*
- c) *shall identify the originating MCS ID from <mcptt-access-token> element received in the application/vnd.3gpp.mcptt-info+xml MIME body and shall use the originating MCS ID as an authenticated identity when performing the authorization;*
- d) *if the authenticated identity is not authorized to subscribe to notification of changes of any resource in the application/resource-lists+xml MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps;*

- e) act as a notifier according to IETF RFC 5875 [13]. Additionally, if an XCAP URI in the "uri" attribute of the <entry> element of the application/resource-lists+xml MIME body of the initial SIP SUBSCRIBE request identifies:
- 1) a group document addressed by a group ID as described in subclause 7.2.10.2 where the group ID is an MCS group ID owned by an MCS provider other than the MCS provider of the GMS; or
 - 2) a element of an MCS GKTP document as described in subclause 7.7.10 where the group ID is an MCS group ID owned by an MCS provider other than the MCS provider of GMS;

shall perform the procedure in subclause 6.3.13.3.2.4 for each such MCS group ID and shall interwork information of received SIP NOTIFY requests in subclause 6.3.13.3.2.4 in SIP NOTIFY requests associated with a subscription created as result of the received initial SIP SUBSCRIBE request.

Upon sending a SIP NOTIFY request associated with a subscription created as result of the received initial SIP SUBSCRIBE request, if the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, the GMS shall perform the confidentiality protection procedures and integrity protection procedures defined in 3GPP TS 24.379 [5] for MCS server.

Upon reception of a SIP re-SUBSCRIBE request:

- a) with the Event header field set to xcap-diff; and
- b) with an application/resource-lists+xml MIME body;

the GMS:

- a) if an <EncryptedData> XML tag is included in the application/resource-lists+xml MIME body of the received SIP re-SUBSCRIBE request and the CSK was received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/resource-lists+xml MIME body; and
- b) act as a notifier according to IETF RFC 5875 [13]. Additionally, if an XCAP URI in the "uri" attribute of the <entry> element of the application/resource-lists+xml MIME body of the SIP re-SUBSCRIBE request identifies:
 - 1) a group document addressed by a group ID as described in subclause 7.2.10.2 where the group ID is an MCS group ID owned by an MCS provider other than the MCS provider of the GMS; or
 - 2) a element of an MCS GKTP document as described in subclause 7.7.10 where the group ID is an MCS group ID owned by an MCS provider other than the MCS provider of GMS;

and for which there is no related subscription established according to the subclause 6.3.13.3.2.4, shall perform the procedure in subclause 6.3.13.3.2.4 for each such MCS group ID and shall interwork information of received SIP NOTIFY requests in subclause 6.3.13.3.2.4 in SIP NOTIFY requests associated with a subscription created as result of the received initial SIP SUBSCRIBE request."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.3.13.3.3]

"Upon reception of an initial SIP SUBSCRIBE request:

- a) with the Event header field set to xcap-diff;
- b) with the Request-URI set to own public service identity for accessing documents;
- c) with a P-Asserted-Identity header field containing an identity listed in the authorized GMS list as specified in subclause 6.2.5.1;
- d) with an application/resource-lists+xml MIME body;
- e) with an application/vnd.3gpp.mcptt-info+xml MIME body; and
- f) with the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24 229 [12]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

the GMS:

- a) if the `<mcptt-calling-user-id>` element is included in the `application/vnd.3gpp.mcptt-info+xml` MIME body:
 - 1) shall use the `<mcptt-calling-user-id>` element value as an authenticated identity when performing the authorization; and
 - 2) if the authenticated identity is not authorized to subscribe to notification of changes of any document or element in the `application/resource-lists+xml` MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps;
- b) if the `<mcptt-calling-group-id>` element is included in the `application/vnd.3gpp.mcptt-info+xml` MIME body:
 - 1) when performing the authorization, shall use URI of the P-Asserted-Identity header field as an authenticated identity and shall determine that the subscription is on behalf of the identity in the `<mcptt-calling-group-id>` element;
 - 2) if the authenticated identity is not authorized to subscribe to notification of changes of any document or element in the `application/resource-lists+xml` MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps; and
 - 3) if the MCS group ID indicated in the `<mcptt-calling-group-id>` element is a constituent MCS group of a temporary MCS group and the documents or elements indicated in the `application/resource-lists+xml` MIME body are not associated with the temporary MCS group ID, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps; and
- c) shall act as a notifier according to IETF RFC 5875 [13]."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 7.2.12.1]

"Authorization policies are described in the OMA OMA-TS-XDM_Group-V1_1_1 [3] "Authorization policies".

An authenticated identity is authorized to read the `<group>` element of an MCS group document.

An authenticated identity is authorized to read a `<list-service>` element of the `<group>` element of the MCS group document and any descendant elements of the `<list-service>` element:

- a) except a `<list>` element of the `<list-service>` element; and
- b) except descendant elements of the `<list>` element of the `<list-service>` element;

if the authenticated identity is a member of an MCS group defined by the `<list-service>` element.

An authenticated identity is authorized to read a `<list>` element of a `<list-service>` element of the `<group>` element of an MCS group document and any descendant elements of the `<list>` element if:

- a) the authenticated identity is a member of MCS group defined by the `<list-service>` element; and
- b) the MCS group document contains a `<rule>` element:
 - 1) with the `<conditions>` element evaluating to true for the authenticated identity or without the `<conditions>` element; and
 - 2) with the `<actions>` element containing the `<on-network-allow-getting-member-list>` element.

An authenticated identity is authorized to read an `<entry>` element of a `<list>` element of a `<list-service>` element of the `<group>` element of the MCS group document and any descendant elements of the `<entry>` element if:

- a) the "uri" attribute of the `<entry>` element contains the authenticated identity;
- b) the "uri" attribute of the `<mcvideo-mcvideo-id>` element of the `<entry>` element contains the authenticated identity; or
- c) the "uri" attribute of the `<mcddata-mcddata-id>` element of the `<entry>` element contains the authenticated identity.

An authenticated identity is authorized to read an MCS group document if the authenticated identity is listed in the authorized MCS server list specified in subclause 6.2.5.1.

An authenticated identity is authorized to create, read, modify and delete an MCS group document if the MCS group document is stored:

- a) in users tree of the XUI equal to the authenticated identity; or*
- b) in users tree of the another XUI, subject to MCS service provider policy. The MCS service provider policy can specified e.g. using an appropriate access permissions document specified in OMA OMA-TS-XDM_Core-V2_1 [2], stored in the user's tree of the other XUI;*

and unless precluded by other statement of this subclause.

None is authorized to create, delete, and modify a <on-network-temporary> element of a <list-service> element of the <group> element of an existing MCS group document.

None is authorized to delete a group document containing a <on-network-regrouped> element of a <list-service> element of the <group> element of an MCS group document.

An authenticated identity is authorized to create and delete a <on-network-regrouped> element in the <list-service> element of the <group> element of an existing MCS group document if the authenticated identity is in authorized GMS list specified in subclause 6.2.5.1.

An authenticated identity is authorized to subscribe to notification of changes of an MCS group document if:

- 1) the authenticated identity is a member of an MCS group defined by a <list-service> element of the <group> element of the MCS group document;*
- 2) the authenticated identity is listed in the authorized MCS server list specified in subclause 6.2.5.1; or*
- 3) the authenticated identity is listed in the authorized GMS list specified in subclause 6.2.5.1 and the subscription is on behalf of a constituent MCS group of the MCS group defined by the MCS group document."*

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.1]

"The MCVideo server obtains information that it needs to implement service authorization specific requirements from:

- a) any received third-party SIP REGISTER request (e.g. including information contained in the body of the third-party SIP REGISTER request) as specified in 3GPP TS 24.229 [11]. The body will carry the SIP REGISTER request as sent by the MCVideo client and may contain information needed for service authorization; or*
- b) any received SIP PUBLISH request for MCVideo server settings containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters. The body of the SIP PUBLISH request will contain information needed for service authorization."*

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.1A]

"When the MCVideo server receives a SIP REGISTER request sent from the MCVideo client contained within a message/sip MIME body of a received third-party SIP REGISTER request or a SIP PUBLISH request, it first determines whether XML MIME bodies included in the request are integrity protected. If XML MIME bodies are integrity protected the MCVideo server validates the signature of each of the XML MIME bodies. If the integrity protection check(s) pass or the XML MIME bodies are not integrity protected, the MCVideo server then determines whether the content in specific XML elements is confidentiality protected. If XML content is confidentiality protected, the MCVideo server decrypts the protected content.

Upon receiving:

- a SIP REGISTER request containing an application/vnd.3gpp.mcvideo-info+xml MIME body within a message/sip MIME body of the SIP REGISTER request sent from the MCVideo client; or*
- a SIP PUBLISH request containing an application/vnd.3gpp.mcvideo-info+xml MIME body and an application/poc-settings+xml MIME body;*

the MCVideo server:

- 1) shall determine if integrity protection has been applied to XML MIME bodies in the SIP request by following the procedures in clause 6.6.3.4.1 for each XML MIME body;
- 2) if integrity protection has been applied, shall use the keying data described in clause 6.6.3.2 and the procedures described in clause 6.6.3.4.2 to verify the integrity of each of the XML MIME bodies; and
- 3) if all integrity protection checks succeed, shall continue with the remaining steps of this clause.

Upon receiving:

- a SIP REGISTER request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-access-token> element and an <mcvideo-client-id> element within a message/sip MIME body of the SIP REGISTER request sent from the MCVideo client; or
- a SIP PUBLISH request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-access-token> element and an <mcvideo-client-id> element, and an application/poc-settings+xml MIME body;

the MCVideo server:

- 1) shall determine if confidentiality protection has been applied to the <mcvideo-access-token> element and the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, by following the procedures in clause 6.6.2.4.1;
- 2) if confidentiality protection has been applied to the <mcvideo-access-token> element and <mcvideo-client-id> element:
 - a) shall use the keying information received in the MIKEY-SAKKE I_MESSAGE as specified in 3GPP TS 33.180 [8], along with the procedures described in clause 6.6.2.4.2 to:
 - i) decrypt the received access token in the <mcvideo-access-token> element in the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) decrypt the received MCVideo client ID in the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - b) if the decryption procedure succeeds, shall identify the MCVideo ID and the MCVideo client ID from the decrypted values; and
 - c) if the decryption procedure fails, shall determine that confidentiality protection has not been successful;
- 3) if confidentiality protection has been applied to only one of the <mcvideo-access-token> element or the <mcvideo-client-id> element:
 - a) shall determine that confidentiality protection has not been successful;
- 4) if confidentiality protection has not been applied:
 - a) shall identify the MCVideo ID from <mcvideo-access-token> element received in the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - b) shall identify the MCVideo client ID from the <mcvideo-client-id> element received in the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receiving a SIP PUBLISH request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-request-uri> element, an <mcvideo-client-id> element, and an application/poc-settings+xml MIME body, the MCVideo server:

- 1) shall determine if confidentiality protection has been applied to the <mcvideo-request-uri> element and the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body by following the procedures in clause 6.6.2.4.1;

- 2) if confidentiality protection has been applied to the <mcvideo-request-uri> element and the <mcvideo-client-id> element:
 - a) shall use the keying information described in clause 6.6.2.2 along with the procedures described in clause 6.6.2.4.2 to:
 - i) decrypt the received encrypted MCVideo ID in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) decrypt the received encrypted MCVideo client ID in the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - b) if all decryption procedures succeed, shall identify the MCVideo ID and MCVideo client ID from the decrypted values; and
 - c) if the decryption procedure fails, shall determine that confidentiality protection has not been successful;
- 3) if confidentiality protection has been applied to only one of the <mcvideo-request-uri> element or <mcvideo-client-id> element:
 - a) shall determine that confidentiality protection has not been successful;
- 4) if confidentiality protection has not been applied:
 - a) shall identify the MCVideo ID from the contents of the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - b) shall identify the MCVideo client ID from the <mcvideo-client-id> element received in the application/vnd.3gpp.mcvideo-info+xml MIME body."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.2]

"The MCVideo server shall support obtaining service authorization specific information from the SIP REGISTER request sent from the MCVideo client and included in the body of a third-party SIP REGISTER request.

NOTE 1: 3GPP TS 24.229 [11] defines how based on initial filter criteria the SIP REGISTER request sent from the UE is included in the body of the third-party SIP REGISTER request.

Upon receiving a third party SIP REGISTER request with a message/sip MIME body containing the SIP REGISTER request sent from the MCVideo client containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-access-token> element and an <mcvideo-client-id> element within a message/sip MIME body of the SIP REGISTER request sent from the MCVideo client, the MCVideo server:

- 1) shall identify the IMS public user identity from the third-party SIP REGISTER request;
- 2) shall identify the MCVideo ID from the SIP REGISTER request sent from the MCVideo client and included in the message/sip MIME body of the third-party SIP REGISTER request by following the procedures in clause 7.3.1A;
- 2a) shall check if the number of maximum simultaneous authorizations supported for the MCVideo user as specified in the <max-simultaneous-authorizations> element of the <anyExt> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]) has been reached. If the number of maximum simultaneous authorizations has been reached, the MCVideo server shall not continue with the rest of the steps in this clause;
- 3) shall perform service authorization for the identified MCVideo ID as described in 3GPP TS 33.180 [8];
- 4) if service authorization was successful, shall bind the MCVideo ID and the MCVideo client ID to the IMS public user identity;
- 4a) if service authorization was successful and if, the service authorization request was from an MCVideo user who is previously MCVideo service authorized on another MCVideo client (as determined by a comparison of the received MCVideo client ID with the MCVideo client ID of existing bindings), keep the current bindings and create a new binding between the MCVideo ID, MCVideo client ID and the IMS public user identity;

NOTE 2: The MCVideo server will store the binding MCVideo ID, MCVideo client ID, IMS public user identity and an identifier addressing the MCVideo server in an external database.

- 5) if a Resource-Share header field with the value "supported" is contained in the "message/sip" MIME body of the third-party REGISTER request, shall bind the MCVideo ID and the MCVideo client ID to the identity of the MCVideo UE contained in the "+g.3gpp.registration-token" header field parameter in the Contact header field of the incoming third-party REGISTER request; and
- 6) if more than one binding exists for the MCVideo ID, shall include in the SIP 200 (OK) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <multiple-devices-ind> element set to a value of "true".

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.3]

"For MCVideo server settings.

Upon receiving a SIP PUBLISH request containing:

- 1) an Event header field set to the "poc-settings" value;
- 2) an application/poc-settings+xml MIME body; and
- 3) an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <mcvideo-access-token> element and an <mcvideo-client-id> element;

the MCVideo server:

- 1) shall identify the IMS public user identity from the P-Asserted-Identity header field;
- 2) shall perform the procedures in clause 7.3.1A;
- ...
- 3a) shall check if the number of maximum simultaneous authorizations supported for the MCVideo user as specified in the <max-simultaneous-authorizations> element of the <anyExt> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]) has been reached...
- 4) shall perform service authorization for the identified MCVideo ID as described in 3GPP TS 33.180 [8];
- 5) if service authorization was successful:
 - a) shall bind the MCVideo ID and MCVideo client ID to the IMS public user identity;
 - b) if the service authorization request was from an MCVideo user who is previously MCVideo service authorized on another MCVideo client (as determined by a comparison of the received MCVideo client ID with the MCVideo client ID of existing bindings), keep the current bindings and create a new binding between the MCVideo ID, MCVideo client ID and the IMS public user identity; and
 - c) if a Resource-Share header field with the value "supported" was included in the "message/sip" MIME body of the third-party REGISTER request, shall bind the MCVideo ID to the identity of the MCVideo UE contained in the "+g.3gpp.registration-token" header field parameter in the Contact header field of the third-party REGISTER request that contained this IMS public user identity;

NOTE 1: The MCVideo server will store the binding MCVideo ID, MCVideo client ID, IMS public user identity and an identifier addressing the MCVideo server in an external database.

- 6) if service authorization was not successful, shall send a SIP 403 (Forbidden) response towards the MCVideo client with the warning text set to: "101 service authorisation failed" in a Warning header field as specified in clause 4.4, and not continue with the rest of the steps in this clause;
- 7) shall process the SIP PUBLISH request according to rules and procedures of IETF RFC 3903 [12] and if processing of the SIP request was not successful, do not continue with the rest of the steps;
- 8) shall cache the received MCVideo service settings until the MCVideo service settings expiration timer expires;

- 9) shall send a SIP 200 (OK) response according to 3GPP TS 24.229 [11] with:
 - a) if more than one binding exists for the MCVideo ID, an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <multiple-devices-ind> element set to the value "true";
- 10) shall use the Answer-Mode Indication setting in the <am-settings> element of the poc-settings event package as the current Answer-Mode Indication of the MCVideo client.
- 11) shall download the MCVideo user profile from the MCVideo user database as defined in 3GPP TS 29.283 [54] if not already stored at the MCVideo server and use the <selected-user-profile-index> element of the poc-settings event package if included to identify the active MCVideo user profile for the MCVideo client;

NOTE 2: If the <selected-user-profile-index> element of the poc-settings event package is included then only that MCVideo user profile is needed to be downloaded from the MCVideo user database.

- 12) if there is no <selected-user-profile-index> element included in the poc-settings event package then if multiple MCVideo user profiles are stored at the MCVideo server or downloaded for the MCVideo user from the MCVideo user database, shall determine the pre-selected MCVideo user profile to be used as the active MCVideo user profile by identifying the MCVideo user profile (see the MCVideo user profile document in 3GPP TS 24.484 [25]) in the collection of MCVideo user profiles that contains a <Pre-selected-indication> element; and

NOTE 3: If only one MCVideo user profile is stored at the MCVideo server or only one MCVideo user profile is downloaded from the MCVideo user database, then by default this MCVideo user profile is the pre-selected MCVideo user profile.

- 13) if an <ImplicitAffiliations> element is contained in the <OnNetwork> element of the MCVideo user profile document with one or more <entry> elements containing an MCVideo group ID (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID, shall perform implicit affiliation as specified in clause 8.2.2.2.15."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.4]

"Upon receiving a SIP PUBLISH request containing:

- 1) an Event header field set to the "poc-settings" value;
- 2) an application/poc-settings+xml MIME body; and
- 3) an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <mcvideo-request-uri> element and an <mcvideo-client-id> element;

The MCVideo server:

- 1) shall identify the IMS public user identity from the P-Asserted-Identity header field;
- 2) shall perform the procedures in clause 7.3.1A;
- ...
- 4) shall verify that a binding between the IMS public user identity in the Request-URI and the MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml exists at the MCVideo server;
- 5) if a binding exists between the IMS public user identity and the MCVideo ID in the request and the validity period of the binding has not expired shall download the MCVideo user profile from the MCVideo user database as defined in 3GPP TS 29.283 [54] if not already stored at the MCVideo server;
- ...
- 7) shall process the SIP PUBLISH request according to rules and procedures of IETF RFC 3903 [12] and if processing of the SIP request was not successful, do not continue with the rest of the steps;
- 8) shall cache the received MCVideo service settings until the MCVideo service settings expiration timer expires;
- 9) shall send a SIP 200 (OK) response according 3GPP TS 24.229 [11];

- 10) shall use the Answer-Mode Indication setting in the <am-settings> element of the poc-settings event package as the current Answer-Mode Indication of the MCVideo client.
- 11) shall download the MCVideo user profile from the MCVideo user database as defined in 3GPP TS 29.283 [54] if not already stored at the MCVideo server and use the <selected-user-profile-index> element of the poc-settings event package if included to identify the active MCVideo user profile for the MCVideo client;

NOTE 1: If the <selected-user-profile-index> element of the poc-settings event package is included then only that MCVideo user profile is needed to be downloaded from the MCVideo user database.

- 12) if there is no <selected-user-profile-index> element included in the poc-settings event package then if multiple MCVideo user profiles are stored at the MCVideo server or downloaded for the MCVideo user from the MCVideo user database, shall determine the pre-selected MCVideo user profile to be used as the active MCVideo user profile by identifying the MCVideo user profile (see the MCVideo user profile document in 3GPP TS 24.484 [25]) in the collection of MCVideo user profiles that contains a <Pre-selected-indication> element; and

NOTE 2: If only one MCVideo user profile is stored at the MCVideo server or only one MCVideo user profile is downloaded from the MCVideo user database, then by default this MCVideo user profile is the pre-selected MCVideo user profile.

- 13) if an <ImplicitAffiliations> element is contained in the <OnNetwork> element of the MCVideo user profile document with one or more <entry> elements containing an MCVideo group ID (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID, shall perform implicit affiliation as specified in clause 8.2.2.2.15."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.5]

"Upon receiving a SIP PUBLISH request containing:

- 1) an Event header field set to the "poc-settings" value; and
- 2) an Expires header field set to 0;

the MCVideo server:

- 1) shall identify the IMS public user identity from the P-Asserted-Identity header field;
- 2) shall process the SIP PUBLISH request according to rules and procedures of IETF RFC 3903 [12] and if processing of the SIP request was successful, continue with the rest of the steps;
- 3) shall remove the MCVideo service settings;
- 4) shall remove the binding between the MCVideo ID and public user identity; and
- 5) shall send a SIP 200 (OK) response according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.6.1]

"Upon receiving a SIP SUBSCRIBE request such that:

- 1) Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the participating MCVideo function of the served MCVideo user;
- 2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> element which identifies an MCVideo ID served by the MCVideo server;
- 3) 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
- 3) the Event header field of the SIP SUBSCRIBE request contains the 'poc-settings' event type.

the MCVideo server:

- 1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

- 2) if the Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE request;
- 3) if the originating MCVideo ID is different than the served MCVideo ID, shall send a 403 (Forbidden) response and shall not continue with the rest of the steps; and
- 4) shall generate a 200 (OK) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16] and IETF RFC 4354 [53].

For the duration of the subscription, the MCVideo server shall notify subscriber about changes of the MCVideo service settings of the subscribed MCVideo user, as described in clause 7.3.6.2."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.6.2]

"In order to notify the subscriber about changes of the MCVideo service settings of the subscribed MCVideo client of the subscribed MCVideo user, the MCVideo server:

- 1) shall generate an application/poc-settings+xml MIME body as defined in 3GPP TS 24.379 [40] containing:
 - a) the <am-settings> element of the poc-settings event package set to the current answer mode setting of the MCVideo client according to IETF RFC 4354 [53]; and
 - b) the <selected-user-profile-index> element as defined in clause 7.4.1.2 identifying the active MCVideo user profile; and
- 2) send a SIP NOTIFY request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16] and IETF RFC 4354 [53] with the constructed application/poc-settings+xml MIME body."

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 5.1.1]

"The generic steps for MCX user authentication and authorisation is shown in figure 5.1.1-1.

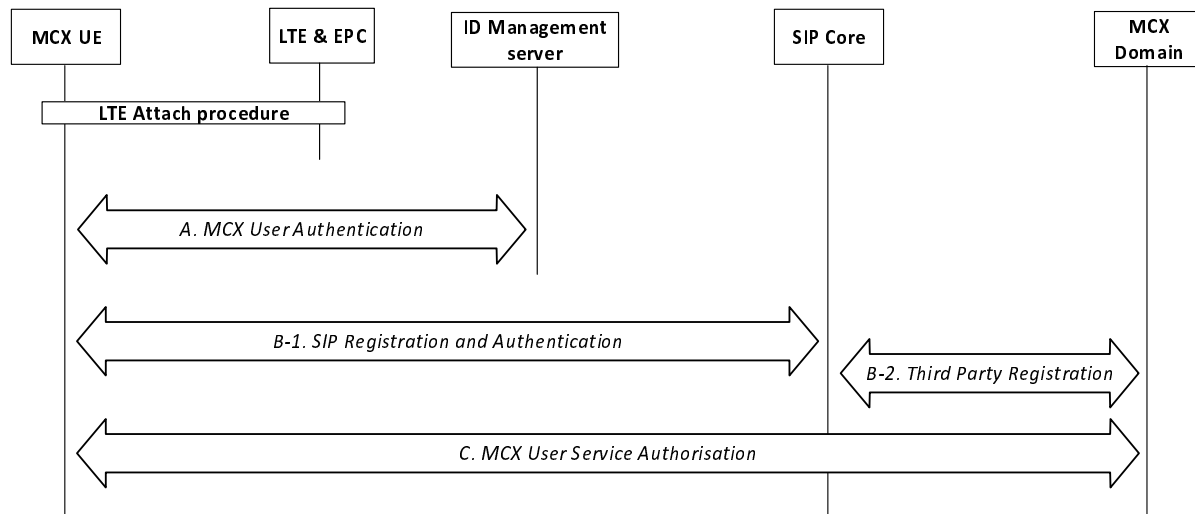


Figure 5.1.1-1: MCX authentication and authorisation

At UE power-on, the MCX UE performs LTE authentication as specified in TS 33.401 [14]. The MCX UE then performs the following steps to complete authentication of the user, authorisation of the user, MCX service registration, and identity binding between signalling layer identities and the MC service ID(s).

- A: MCX user authentication.
- B: SIP Registration and Authentication.
- C: MCX Service Authorization.

These procedures are described in more detail in subsequent clauses.

Steps A and B may be performed in either order or in parallel. For scenarios where this order has an impact on the identity bindings between signalling layer identities and the MC service ID(s), a re-registration (Step B) to the SIP Core may be performed to update the registered signalling layer identity.

If an MCX UE completes SIP registration in Step B prior to performing MCX user authentication in Step A and MCX user service authorization as part of Step C, the MCX UE shall be able to enter a 'limited service' state. In this limited state, where the MCX user is not yet authorized with the MCX service, the MCX UE shall be able to use limited MCX services (e.g. an anonymous MCX emergency communication). The MCX Server is informed of the registration of the MC UE with the SIP core through Step B-2.

Additionally, an HTTP-1 authentication mechanism is used.

NOTE: Mechanisms for confidentiality and integrity protection (not defined in this clause) may be combined only with certain authentication procedures."

[ETSI TS 133 180 [7] (3GPP 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 subclause 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 access token shall be scoped for key management services as defined in annex B.4.2.2. 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 MCDData ID). User specific key material includes identity based key information for media and signalling protection. If an interworking key management record (InterKMRec) exists and is associated to the requesting MC service ID (see clause 11.2.3), the KMS shall also provide the InterKMRec. This key management authorisation may be repeated for each KM service the user is authorised to use (MCPTT, MCVideo, MCDData). In order to secure the transfer of user specific key material from the KMS to the KM client when using the TrK and InK, the KM client includes the TrK-ID and the InK-ID in the key management authorization request.

...

For MCVideo service authorization, the MCVideo client in the UE presents an access token to the MCVideo server over SIP. The access token shall be scoped for MCVideo services as defined in annex B.4.2.2. 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, MCDData). 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 access token shall be scoped for configuration management services as defined in annex B.4.2.2. 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, MCDData 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, MCDData).

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 access token shall be scoped for group management services as defined in annex B.4.2.2. 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, MCDATA).

For MC UEs that support mission critical location services, authorization is accomplished by including an access token in each location message (i.e. location information report, location reporting trigger, etc.) sent by the location management client to the location management server. The access token shall be scoped for location management services as defined in annex B.4.2.2. The location management server validates the access token and (if successful) processes the message (e.g. accepts and stores the location information report). If an access token cannot be validated, local policy may dictate an action to be taken within the location management server with regards to the received location message (e.g. the local policy may require storage of the location information report as an emergency provision).

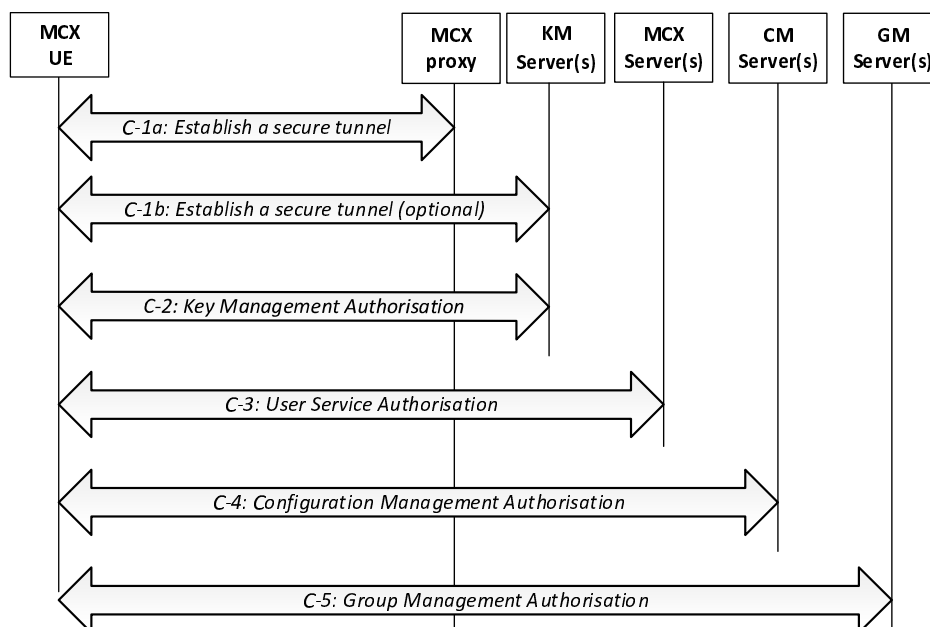


Figure 5.1.3.1-1: MCX user service authorization

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-1a: 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 .
- Step C-1b: When required by the MCX system, establish a secure HTTP tunnel using HTTPS between the MCX KM client and the KMS. When supported, subsequent HTTP messaging between the MCX KM client and the KMS makes use of this tunnel in lieu of the tunnel set up in Step C-1a.
- Step C-2: The KM client in the MCX 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, MCDATA) 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, MCDATA) 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 MCDData).
- 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, MCDData) as necessary."

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 5.2.2]

"The security mechanism described in this clause allows a key, K, to be distributed from an initiating party to a receiving party. It provides confidentiality of the key, and integrity and authenticity of the payload. It is used within a number of different security procedures in this specification.

The key, K, is distributed encrypted specifically to the receiving entity and signed by the initiating entity. Prior to call commencement, both MCX UEs shall be provisioned by the KMS with time-limited key material associated with the MCX entity's URI. The key is distributed with a 32-bit Key Identifier (K-ID). This payload is a MIKEY-SAKKE I_MESSAGE, as defined in IETF RFC 6509 [11], which ensures the confidentiality of the key, plus integrity and authenticity of the payload.

The key is encrypted to the user identity (UID) associated to the receiving MCX entity using the security domain parameters provided in the public values in the certificate received from the KMS. The UID used to encrypt the data is derived from the receiving entity's URI (e.g. sip:user.002@mcptt.example.org) and a time-related parameter (e.g. the current year and month). The terminating entity's URI is added to the recipient field (IDRr) of the message.

The payload includes the encrypted key and the key identifier (K-ID). The key is unique within the MC domain. On creating the key, the initiator generates a 32-bit key identifier (K-ID). The 4 most significant bits of the K-ID shall indicate the purpose of the key, the other 28-bits shall be randomly generated. The key identifier (K-ID) is stored in the CSB-ID field of the MIKEY I_MESSAGE.

The payload is signed using (the KMS-provisioned key associated to) the identity of the initiating entity. The UID used to sign the data is derived from the initiating entity's URI (e.g. sip:user.001@mcptt.example.org) and a time-related parameter (e.g. the current year and month). The initiating entity's URI is added to the initiator field (IDRi) of the message.

NOTE: This solution is for the end-to-end protection of keys and does not protect the identities transmitted. Identities may be masked by transmitting the UID within the MIKEY ID fields as described in Annex E.7.

The security processes are summarized in figure 5.2.2-1.

...

Via this mechanism, the key distribution is confidentiality protected, authenticated and integrity protected.

It is possible that the key has been distributed using an unacceptable KMS, either for the initiator's KMS or for the receiver's KMS. This is particularly likely for communications being sent across multiple MC Systems (where KMS information may not have been shared prior to beginning the key distribution procedure). In this case, a KMS Redirect Response (KRR) may be sent back to the initiator. The KRR provides the initiator with information about which KMS may be acceptable. KRR procedures are described in clause 5.2.8.

Assuming that acceptable KMS(s) have been used, the I_MESSAGE will be processed by the receiving entity. The initiating entity's URI is extracted from the initiator field (IDRi) of the message. This is converted to a UID and used to check the signature on the MIKEY-SAKKE I_MESSAGE. If valid, the UE extracts and decrypts the encapsulated key, K, using the (KMS-provisioned) entity's UID key. The MCX entity also extracts the K-ID. This process is shown in figure 5.2.2-2.

...

With the key successfully shared between the two MCX entities, the entities are able to use the shared security context to protect communications."

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 5.3.5]

"A KMS Certificate is defined in Annex D.3.2. A KMS Certificate contains the following:

- *A Role of 'Home' or 'External', depending on whether the certificate is the issuing KMS's or is provided by another external KMS.*
- *The KMS Public Authentication Key (KPAK in IETF RFC 6507 [9]).*
- *The KMS Public Confidentiality Key (Z_T in IETF RFC 6508 [10]).*
- *The UID conversion (as described below).*
- *Choice of cryptographic domain parameters (such as those listed in IETF RFC 6509 [8]).*
- *The time period for which this information is valid.*

Certificates are identified by the KMS (KMSUri) and a unique identifier (CertUri). A (logical) KMS should only have a single KMS certificate active at any one time (based upon the KMSUri). Certificates may be updated using the CertUri. Should a client receive a certificate with a CertURI of an existing certificate, the client shall replace this existing certificate with the newly provisioned certificate.

The UID conversion mechanism defines how UIDs are generated. Using this information a MC client can take a user identifier (e.g. an MCPTT ID), and the current time, (e.g. the year and month) and convert these to a UID.

EXAMPLE: UID = Hash (MCPTT ID, KMS URI, validity period info).

As a consequence, there is a one-to-one correspondence between MC Service IDs and UIDs during each time period."

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 5.3.6]

"KMSKeySet(s) are defined in Annex D.3.3.2 and contain the following:

- *A user signing key for each UID for the current time period (SSK and PVT in IETF RFC 6507 [9]).*
- *A user decryption key for each UID for the current time period (RSK in IETF RFC 6508 [10]).*
- *The key period number associated with the current keys.*
- *Optionally, the time period, for which the user key material is valid (e.g. month)."*

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 5.8.1]

"The 'key download' procedure is used to send keys from the MCX server to the MC client. It is used to distribute Multicast Signalling Keys (MuSiKs) to the MC clients, and it is used to update both the CSKs and MuSiKs.

Within the 'key download' procedure, keys (CSK or MuSiKs) are encrypted specifically to the MC user and signed using an identity representing the MC Server. Prior to group key distribution, each MC client shall be provisioned by the KMS with time-limited key material associated with the MC User as described clause 5.3. The MC Server shall also be provisioned by the MC KMS with key material for an identity which is authorised to act as an MCX Server.

The key (CSK or MuSiK) is distributed from the MCX Server to a MC client using the security mechanism described in clause 5.2.2, transported over the SIP bearer. End-point diversity is not required as end-points do not encrypt data, hence the extension in clause 5.2.3 is not applied. Additional parameters may be included as defined in clause 5.2.4. The SAKKE-to-self extension may be included as defined in clause 5.2.5. Identity hiding may be supported as defined in clause 5.2.6.

The initiating entity shall be the initiating MCX Server and the receiving entity shall be the terminating MC user. The initiating entity URI shall be the FQDN of the MCX Server (e.g. MDSI of the MC Domain) and the receiving entity URI shall be the MC Service ID of the terminating user. The distributed key, K, shall be the CSK or MuSiK and the key identifier K-ID shall be the CSK-ID or MuSiK-ID (respectively).

As a result of this 'key download' mechanism, the MC clients receive a new signalling key, CSK or MuSiK, identified by the 4 most significant bits of the key ID.

The MCDATA Service server may use the Key Download procedure to indicate or modify the algorithm used to protect the MCDATA signalling fields (i.e. MCDATA signaling parameters, Data signaling payload and End to end security parameters) by including a 'signalling algorithm' parameter. The 'signalling algorithm' parameter is described in clause 8.5.4.1. The available algorithms shall be as defined in clause 8.5.4.2."

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 9.2.1.1]

"A Client-Server Key is required to protect unicast RTCP signalling between the MC client and the MCX Server. The use of the CSK in this context is defined in clause 9.4.

Additionally, the MC Service provider may require that MC identities, access tokens and other sensitive information transferred between clients and MC domain on the SIP-1 and SIP-2 interfaces be protected at the application layer from any viewing, including protection from viewing at the SIP signalling layer. Symmetric key based protection of SIP payload using CSK may be used to satisfy this requirement. The use of CSK in this context is defined in clause 9.3.

The uses of the CSK are shown in Figure 9.2.1-1

..."

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 9.2.1.2]

"The 128-bit CSK is initially generated by the client and provided encrypted to the server through the SIP interface along with the CSK-ID identifying the CSK.

The key remains in use until: a new CSK is required, the SIP session is torn down, the MC user logs off, or some other indication. If during the active SIP session an update of the CSK is required, the server generates a CSK and provides it to the client using the mechanism defined in clause 5.8."

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 9.2.1]

"The CSK is initially distributed via the 'CSK upload' procedure as defined in clause 5.4. The 'CSK upload' procedure creates a security association between the MC client and the MCX Server and occurs during the client's initial connection with the MC Server.

The following steps describe how the client obtains the user specific key material and securely transfers the CSK to a server within the MC domain.

Prior to beginning of this procedure, the client would have obtained user-specific key material from the KMS.

- 1) *The client randomly generates the CSK and encapsulates the CSK as described in clause 5.4.*
- 2) *The client includes the encapsulated CSK in its initial SIP REGISTER or in a SIP PUBLISH message that is used to perform the MC user authorization procedure, and sends the SIP message addressed to the PSI of the server.*

An illustration is provided below as an example of how this message is included in the body of the SIP REGISTER message. The MIME media type "application/mikey" IETF RFC 3830 [22] is used in this example to insert a MIKEY I_MESSAGE in the SIP payload:

...

The following steps describe how the MCX Server retrieves the CSK from the SIP message:

- 1) *The server receives the SIP message and decrypts the encapsulated CSK as described in clause 5.4.*
- 2) *Once the CSK has been extracted, MC user specific information (e.g. the access token) protected in the SIP message as defined in clause 9.3.4, may be decrypted."*

5.1.3 Test description

5.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client) and the MCVideo Server will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1.
- The IUT (MCVideo Server) is connected to the SS-UE1 (MCVideo Client) as defined in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Figure 4.2.4, where term "MCPTT" is replaced with "MCVideo".

5.1.3.2 Test procedure sequence

Table 5.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
0A	The SS-UE1 (MCVideo Client) sends an HTTP GET (initial UE configuration) request to retrieve the initial UE configuration from the Server.	-->	HTTP GET	-	-
0B	Check: Does the IUT (MCVideo Server) respond by sending an HTTP 200 (OK) including the initial UE configuration document?	<--	HTTP 200 (OK)	1	P
0C	The SS-UE1 (MCVideo Client) establishes a secure TLS tunnel as specified by ETSI TS 133 310 [6] (3GPP TS 33.310) to the authorisation endpoint of the IdM server as specified in ETSI TS 133 180 [7] (3GPP TS 33.180) using the configured URL of the authorisation endpoint of the IdM server as specified in the "<x>/OnNetwork/AppServerInfo/IDMSAuthEndpoint" leaf node, Table 5.5.8.1-1, ETSI TS 136 579-1 [1] (3GPP TS 36.579-1).	-	-	-	-
1	The SS-UE1 (MCVideo Client) sends an OpenID Connect Authentication Request using HTTP POST	-->	HTTP POST (Authorization)	-	-
2	Check: Does the IUT (MCVideo Server) respond by sending an HTTP 200 (OK) including the HTML form requesting username and password?	<--	HTTP 200 (OK)	1	P
3	The SS-UE1 (MCVideo Client) sends an HTTP POST Request message to the IUT (MCVideo Server) containing username and password	-->	HTTP POST	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
4	Check: Does the IUT (MCVideo Server) send an HTTP 302 (Found) as the OpenID Connect Authentication Response?	<--	HTTP 302 (Found)	1	P
5	The SS-UE1 (MCVideo Client) establishes a secure TLS tunnel as specified by ETSI TS 133 310 [6] (3GPP TS 33.310) to the token endpoint of the IdM server as specified in ETSI TS 133 180 [7] (3GPP TS 33.180) using the configured URL of the token endpoint of the IdM server as specified in the "/<x>/OnNetwork/AppServerInfo/IDMSTokenEndpoint" leaf node, Table 5.5.8.1-1, ETSI TS 136 579-1 [1] (3GPP TS 36.579-1)	-	-	-	-
6	The SS-UE1 (MCVideo Client) sends an HTTP POST Request message to the IUT (MCVideo Server) over the TLS connection established to the IdM token endpoint (OIDC Token Request message) passing the authorization code sent in step 4.	-->	HTTP POST	-	-
7	Check: Does the IUT (MCVideo Server) send an HTTP 200 (OK) providing id_token, access_token and refresh token?	<--	HTTP 200 (OK)	1	P
7A	The SS-UE1 (MCVideo Client) establishes a secure TLS tunnel as specified by ETSI TS 133 310 [6] (3GPP TS 33.310) to the HTTP Proxy as specified in ETSI TS 133 180 [7] (3GPP TS 33.180) using the configured URL of the HTTP Proxy as specified in the "/<x>/OnNetwork/AppServerInfo/HTTPproxy" leaf node, Table 5.5.8.1-1, ETSI TS 136 579-1 [1] (3GPP TS 36.579-1)	-	-	-	-
8	The SS-UE1 (MCVideo Client) sends an HTTP POST message presenting an access token sent in step 7 for Key Management Initialisation.	-->	HTTP POST	-	-
9	Check: Does the IUT (MCVideo Server) respond by sending identity-specific key information?	<--	HTTP 200 (OK)	2	P
10	The SS-UE1 (MCVideo Client) sends an HTTP POST message presenting an access token for Key Material Request	-->	HTTP POST	-	-
11	Check: Does the IUT (MCVideo Server) respond by sending identity-specific key information?	<--	HTTP 200 (OK)	2	P
12	The SS-UE1 (MCVideo Client) sends a SIP REGISTER request for service authorisation	-->	SIP REGISTER	-	-
13	Check: Does the IUT (MCVideo Server) respond by sending an SIP 200 (OK) message?	<--	SIP 200 (OK)	3	P
14	The SS-UE1 (MCVideo Client) sends a SIP SUBSCRIBE - subscription to multiple documents simultaneously - containing the access token and a resource list mime body containing a list of the following documents: MCVideo UE Configuration document, MCVideo User Profile Configuration Document, and the MCVideo Service configuration document. The base URI of each list entry is set to the CMS XCAP-ROOT-URI	-->	SIP SUBSCRIBE	-	-
15	Check: Does the IUT (MCVideo Server) respond by sending an SIP 200 (OK) message?	<--	SIP 200 (OK)	4	P
16	Check: Does the IUT (MCVideo Server) send a SIP NOTIFY message containing the XCAP-URI of the documents?	<--	SIP NOTIFY	4	P
17	The SS-UE1 (MCVideo Client) responds with a SIP 200 (OK) message	-->	SIP 200 (OK)	-	-
18	The SS-UE1 (MCVideo Client) sends an HTTP GET Request message that contains the access token and the XCAP-URI of the MCVideo UE Configuration document	-->	HTTP GET	-	-
19	Check: Does the IUT (MCVideo Server) send the HTTP 200 (OK) message including the MCVideo UE Configuration Document?	<--	HTTP 200 (OK)	4	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
20	The SS-UE1 (MCVideo Client) sends an HTTP GET Request message that contains the access token and the XCAP-URI of the MCVideo User Profile Configuration Document	-->	HTTP GET	-	-
21	Check: Does the IUT (MCVideo Server) send the HTTP 200 (OK) message including the MCVideo User Profile Configuration Document?	<--	HTTP 200 (OK)	4	P
22	The SS-UE1 (MCVideo Client) sends an HTTP GET Request message that contains the access token and the XCAP-URI of the MCVideo Service Configuration Document	-->	HTTP GET	-	-
23	Check: Does the IUT (MCVideo Server) send the HTTP 200 (OK) message including the MCVideo Service Configuration Document?	<--	HTTP 200 (OK)	4	P
24	The SS-UE1 (MCVideo Client) sends a SIP SUBSCRIBE containing the access token and a resource list mime body and a list of the Groups to be obtained. The base URI of each list entry is set to the GMS XCAP-ROOT-URI, and the MCVideo group ID identifies a group document	-->	SIP SUBSCRIBE	-	-
25	Check: Does the IUT (MCVideo Server) respond with a HTTP 200 (OK) message	<--	SIP 200 (OK)	5	P
26	Check: Does the IUT (MCVideo Server) send a SIP NOTIFY message to the UE that contains the XCAP-URI of the Group documents?	<--	SIP NOTIFY	5	P
27	The SS-UE1 (MCVideo Client) sends a SIP 200 (OK) message	-->	SIP 200 (OK)	-	-
28	The SS-UE1 (MCVideo Client) sends an HTTP GET Request message that contains the access token and the XCAP-URI of the Group Configuration document	-->	HTTP GET	-	-
29	Check: Does the IUT (MCVideo Server) send an HTTP 200 (OK) message including the Group Document 'MCVideo UE Configuration document'?	<--	HTTP 200 (OK)	5	P
29A	Check: Does the IUT (MCVideo Server) send a SIP NOTIFY message to the UE that contains the group key transport payloads (GKTP) document.	<--	SIP NOTIFY	5	P
29B	The SS-UE1 (MCVideo Client) sends a SIP 200 (OK) message	-->	SIP 200 (OK)	-	-
30	The SS-UE1 (MCVideo Client) sends a SIP PUBLISH request for update of PoC-settings. NOTE: The PoC-settings document contains the user profile index of the selected user profile.	-->	SIP PUBLISH	-	-
31	Check: Does the IUT (MCVideo Server) send a SIP 200 (OK)?	<--	SIP 200 (OK)	6	P

5.1.3.3 Specific message contents

Table 5.1.3.3-1: HTTP POST (Step 1, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.3-1, condition AUTH

Table 5.1.3.3-2: HTTP POST (Step 3, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.3-1, condition USERAUTH

Table 5.1.3.3-3: HTTP POST (Step 6, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.3-1, condition TOKEN

Table 5.1.3.3-4: HTTP POST (Step 8, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.3-1, condition KMSINIT.

Table 5.1.3.3-5: HTTP POST (Step 10, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.3-1, condition KMSKEY.

Table 5.1.3.3-5A: HTTP 200 (OK) (Step 0B, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1, condition UEINITIALCONFIG

Table 5.1.3.3-6: HTTP 200 (OK) (Step 2, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
media-type	"text/html"		IETF RFC 2854 [12]	
Message-body				
HTML form	<pre><!DOCTYPE html> <html> <body> <form action="/idms/userauth" method="post"> Username: <input type="text" name="user">
 Password: <input type="password" name="password"><button type="submit">Login</button> </form> </body> </html></pre>	"/idms/userauth" given by tsc_MCX_IdMS_user auth UriPath is the URI to be used by the UE as request URI in the HTTP POST request for user authentication	HTML 4.01 Specification [13]	

Table 5.1.3.3-7: HTTP 200 (OK) (Step 7, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1, condition TOKEN

Table 5.1.3.3-8: HTTP 200 (OK) (Step 9, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1, condition KMSINIT.

Table 5.1.3.3-9: HTTP 200 (OK) (Step 11, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1, condition KMSKEY.

Table 5.1.3.3-10: HTTP 200 (OK) (Step 19, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1, conditions MCVIDEO and UECONFIG.

Table 5.1.3.3-11: HTTP 200 (OK) (Step 21, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1, conditions MCVIDEO and UEUSERPROF.

Table 5.1.3.3-12: HTTP 200 (OK) (Step 23, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1, conditions MCVIDEO and UESERVCONFIG.

Table 5.1.3.3-13: HTTP 200 (OK) (Step 29, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1, condition GROUPCONFIG.

Table 5.1.3.3-14: HTTP 302 (Found) (Step 4, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.8-1, condition AUTH.

Table 5.1.3.3-14A: HTTP GET (Step 0A, Table 5.1.3.2-1)

Derivation Path: Table 5.5.4.2-1, condition UEINITIALCONFIG

Table 5.1.3.3-15: HTTP GET (Step 18, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.2-1, conditions MCVIDEO and UECONFIG.

Table 5.1.3.3-16: HTTP GET (Step 20, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.2-1, conditions MCVIDEO and UEUSERPROF.

Table 5.1.3.3-17: HTTP GET (Step 22, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.2-1, conditions MCVIDEO and UESERVCONFIG.

Table 5.1.3.3-18: HTTP GET (Step 28, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.2-1, condition GROUPCONFIG

Table 5.1.3.3-19: SIP REGISTER (Step 12, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.13-1, condition SIP_REGISTER_INITIAL, CONFIG

Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	tsc_MCVidéo_PublicSer vicId B	SIP URI of the home domain name		

Table 5.1.3.3-20: SIP SUBSCRIBE (Step 14, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.14-1, condition CONFIG

Table 5.1.3.3-20A: SIP SUBSCRIBE (Step 24, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.14-1, condition GROUPCONFIG				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		Resource lists		
MIME-part-body	Resource-lists as described in Table 5.1.3.3-20B			

Table 5.1.3.3-20B: Resource-lists in SIP SUBSCRIBE (Table 5.1.3.3-20A)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.3.1A-1, condition GROUPCONFIG

Table 5.1.3.3-21: SIP NOTIFY (Step 16, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.8-1, condition CONFIG				
Information Element	Value/remark	Comment	Reference	Condition
Contact				
addr-spec				
user-info and host	tsc_MCVideo_PublicServiceId_B			

Table 5.1.3.3-21A: SIP NOTIFY (Step 26, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.8-1, condition GROUPCONFIG				
Information Element	Value/remark	Comment	Reference	Condition
Contact				
addr-spec				
user-info and host	tsc_MCVideo_PublicServiceId_B			

Table 5.1.3.3-21B: SIP NOTIFY (Step 29A, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.8-1, condition GROUPCONFIG				
Information Element	Value/remark	Comment	Reference	Condition
Contact				
addr-spec				
user-info and host	tsc_MCVideo_PublicServiceId_B			
Message-body				
xcap-diff document	xcap-diff document as described in Table 5.1.3.3-21C			

Table 5.1.3.3-21C: Xcap-Diff Document (Table 5.1.3.3-21B)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.12-2, condition GROUPKEY

Table 5.1.3.3-22: SIP PUBLISH (Step 30, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.11-1, conditions MCVIDEO and POC-SETTINGS-EVENT				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	tsc_MCVideo_PublicServiceId_B	The public service identity identifying the originating participating MCVideo function serving the MCVideo user		

Table 5.1.3.3-23: SIP 200 (OK) (Steps 13, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1 condition REGISTER-RSP				
Information Element	Value/remark	Comment	Reference	Condition

Table 5.1.3.3-24: SIP 200 (OK) (Steps 15, 25, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), 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	tsc_MCVideo_PublicServiceId_B			

Table 5.1.3.3-25: SIP 200 (OK) (Step 31, Table 5.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1 condition PUBLISH-RSP				
Information Element	Value/remark	Comment	Reference	Condition

5.2 MCVIDEO Server - MCVIDEO Client / Configuration / Group Creation / Group Regroup Creation / Group Regroup Teardown

5.2.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 and supports new MCVideo terminated group }
ensure that {
  when { the UE (MCVideo Client) initiates creation of the terminated group by sending a HTTP PUT request }
  then { IUT (MCVideo Server) responds to the UE (MCVideo Client) with a HTTP 201 (Created) }
}
```

(2)

```
with { IUT (MCVideo Server) having establish terminated group }
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates creation of the terminated temporary group by sending a HTTP POST request }
  then { IUT (MCVideo Server) responds with a HTTP 200 (OK) containing the GMOP group-regroup-creation-response }
}
```

(3)

```
with { IUT (MCVideo Server) having establish a temporary group }
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates tear down of the temporary group by sending a HTTP DELETE request }
  then { IUT (MCVideo Server) responds to the UE (MCVideo Client) with HTTP 200 (OK) message }
}
```

5.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: ETSI TS 124 481 [29] (3GPP TS 24.481), clauses 5.4, 5.2A, 6.2.4, 6.3.3.3, 6.3.13.3.2.2, 6.3.13.3.3, 7.2.12.1, 6.3.2.3, 6.3.14.3.1 and 6.3.15.3.1, ETSI TS 133 180 [7] (3GPP TS 33.180) clauses 7.3.2 and 7.3.3.2. Unless otherwise stated these are Rel-14 requirements.

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 5.4]

"To be compliant with the procedures in the present document, an MCVideo server shall support role of an MCS server as specified in subclause 5.2A."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 5.2A]

"To be compliant with the procedures in the present document, an MCS server:

- *shall support the role of XCAP client as specified in IETF RFC 4825 [22];*
- *shall support the role of XDMC as specified in OMA OMA-TS-XDM_Group-V1_1_1 [3];*
- *shall support the procedure in subclause 6.2.4;*
- *shall support the procedure in subclause 6.3.3.2.3; and*
- *shall support the procedure in subclause 6.3.13.2.2."*

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.2.4]

"The MCS server shall send the HTTP request as specified for the HTTP client in the network entity in annex A of 3GPP TS 24.482 [10].

The MCS server shall perform the procedures in subclause 6.2.2 specified for GC."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.3.3.3]

"A GMS shall support handling an HTTP GET request from a GMC according to procedures specified in IETF RFC 4825 [22] "GET Handling" where the Request-URI of the HTTP GET request identifies an XML document of the application usage specified in subclause 7.2."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.3.13.3.2.2]

"Upon reception of an initial SIP SUBSCRIBE request:

- a) *with the Event header field set to xcap-diff;*
- b) *with the Request-URI set to own public service identity for performing subscription proxy function of the GMS;*
- c) *with a P-Asserted-Identity header field not containing an identity listed in the authorized MCS server list specified in subclause 6.2.5.1 and not containing an identity listed in the authorized GMS list as specified in subclause 6.2.5.1;*
- d) *with an application/vnd.3gpp.mcptt-info+xml MIME body containing the <mcptt-access-token> element;*
- e) *with an application/resource-lists+xml MIME body; and*
- f) *with the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24 229 [12]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];*

the GMS:

- a) *if an <EncryptedData> XML tag is included in the application/vnd.3gpp.mcptt-info+xml MIME body and the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/vnd.3gpp.mcptt-info+xml MIME body;*
- b) *if an <EncryptedData> XML tag is included in the application/resource-lists+xml MIME body and the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/resource-lists+xml MIME body;*
- c) *shall identify the originating MCS ID from <mcptt-access-token> element received in the application/vnd.3gpp.mcptt-info+xml MIME body and shall use the originating MCS ID as an authenticated identity when performing the authorization;*
- d) *if the authenticated identity is not authorized to subscribe to notification of changes of any resource in the application/resource-lists+xml MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps;*

- e) act as a notifier according to IETF RFC 5875 [13]. Additionally, if an XCAP URI in the "uri" attribute of the <entry> element of the application/resource-lists+xml MIME body of the initial SIP SUBSCRIBE request identifies:
- 1) a group document addressed by a group ID as described in subclause 7.2.10.2 where the group ID is an MCS group ID owned by an MCS provider other than the MCS provider of the GMS; or
 - 2) a element of an MCS GKTP document as described in subclause 7.7.10 where the group ID is an MCS group ID owned by an MCS provider other than the MCS provider of GMS;

shall perform the procedure in subclause 6.3.13.3.2.4 for each such MCS group ID and shall interwork information of received SIP NOTIFY requests in subclause 6.3.13.3.2.4 in SIP NOTIFY requests associated with a subscription created as result of the received initial SIP SUBSCRIBE request.

Upon sending a SIP NOTIFY request associated with a subscription created as result of the received initial SIP SUBSCRIBE request, if the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, the GMS shall perform the confidentiality protection procedures and integrity protection procedures defined in 3GPP TS 24.379 [5] for MCS server.

Upon reception of a SIP re-SUBSCRIBE request:

- a) with the Event header field set to xcap-diff; and
- b) with an application/resource-lists+xml MIME body;

the GMS:

- a) if an <EncryptedData> XML tag is included in the application/resource-lists+xml MIME body of the received SIP re-SUBSCRIBE request and the CSK was received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/resource-lists+xml MIME body; and
- b) act as a notifier according to IETF RFC 5875 [13]. Additionally, if an XCAP URI in the "uri" attribute of the <entry> element of the application/resource-lists+xml MIME body of the SIP re-SUBSCRIBE request identifies:
 - 1) a group document addressed by a group ID as described in subclause 7.2.10.2 where the group ID is an MCS group ID owned by an MCS provider other than the MCS provider of the GMS; or
 - 2) a element of an MCS GKTP document as described in subclause 7.7.10 where the group ID is an MCS group ID owned by an MCS provider other than the MCS provider of GMS;

and for which there is no related subscription established according to the subclause 6.3.13.3.2.4, shall perform the procedure in subclause 6.3.13.3.2.4 for each such MCS group ID and shall interwork information of received SIP NOTIFY requests in subclause 6.3.13.3.2.4 in SIP NOTIFY requests associated with a subscription created as result of the received initial SIP SUBSCRIBE request."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.3.13.3.3]

"Upon reception of an initial SIP SUBSCRIBE request:

- a) with the Event header field set to xcap-diff;
- b) with the Request-URI set to own public service identity for accessing documents;
- c) with a P-Asserted-Identity header field containing an identity listed in the authorized GMS list as specified in subclause 6.2.5.1;
- d) with an application/resource-lists+xml MIME body;
- e) with an application/vnd.3gpp.mcptt-info+xml MIME body; and
- f) with the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24 229 [12]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

the GMS:

- a) if the `<mcptt-calling-user-id>` element is included in the `application/vnd.3gpp.mcptt-info+xml` MIME body:
 - 1) shall use the `<mcptt-calling-user-id>` element value as an authenticated identity when performing the authorization; and
 - 2) if the authenticated identity is not authorized to subscribe to notification of changes of any document or element in the `application/resource-lists+xml` MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps;
- b) if the `<mcptt-calling-group-id>` element is included in the `application/vnd.3gpp.mcptt-info+xml` MIME body:
 - 1) when performing the authorization, shall use URI of the P-Asserted-Identity header field as an authenticated identity and shall determine that the subscription is on behalf of the identity in the `<mcptt-calling-group-id>` element;
 - 2) if the authenticated identity is not authorized to subscribe to notification of changes of any document or element in the `application/resource-lists+xml` MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps; and
 - 3) if the MCS group ID indicated in the `<mcptt-calling-group-id>` element is a constituent MCS group of a temporary MCS group and the documents or elements indicated in the `application/resource-lists+xml` MIME body are not associated with the temporary MCS group ID, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps; and
- c) shall act as a notifier according to IETF RFC 5875 [13]."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 7.2.12.1]

"Authorization policies are described in the OMA OMA-TS-XDM_Group-V1_1_1 [3] "Authorization policies".

An authenticated identity is authorized to read the `<group>` element of an MCS group document.

An authenticated identity is authorized to read a `<list-service>` element of the `<group>` element of the MCS group document and any descendant elements of the `<list-service>` element:

- a) except a `<list>` element of the `<list-service>` element; and
- b) except descendant elements of the `<list>` element of the `<list-service>` element;

if the authenticated identity is a member of an MCS group defined by the `<list-service>` element.

An authenticated identity is authorized to read a `<list>` element of a `<list-service>` element of the `<group>` element of an MCS group document and any descendant elements of the `<list>` element if:

- a) the authenticated identity is a member of MCS group defined by the `<list-service>` element; and
- b) the MCS group document contains a `<rule>` element:
 - 1) with the `<conditions>` element evaluating to true for the authenticated identity or without the `<conditions>` element; and
 - 2) with the `<actions>` element containing the `<on-network-allow-getting-member-list>` element.

An authenticated identity is authorized to read an `<entry>` element of a `<list>` element of a `<list-service>` element of the `<group>` element of the MCS group document and any descendant elements of the `<entry>` element if:

- a) the "uri" attribute of the `<entry>` element contains the authenticated identity;
- b) the "uri" attribute of the `<mcvideo-mcvideo-id>` element of the `<entry>` element contains the authenticated identity; or
- c) the "uri" attribute of the `<mcddata-mcddata-id>` element of the `<entry>` element contains the authenticated identity.

An authenticated identity is authorized to read an MCS group document if the authenticated identity is listed in the authorized MCS server list specified in subclause 6.2.5.1.

An authenticated identity is authorized to create, read, modify and delete an MCS group document if the MCS group document is stored:

- a) in users tree of the XUI equal to the authenticated identity; or
- b) in users tree of the another XUI, subject to MCS service provider policy. The MCS service provider policy can specified e.g. using an appropriate access permissions document specified in OMA OMA-TS-XDM_Core-V2_1 [2], stored in the user's tree of the other XUI;

and unless precluded by other statement of this subclause.

None is authorized to create, delete, and modify a <on-network-temporary> element of a <list-service> element of the <group> element of an existing MCS group document.

None is authorized to delete a group document containing a <on-network-regrouped> element of a <list-service> element of the <group> element of an MCS group document.

An authenticated identity is authorized to create and delete a <on-network-regrouped> element in the <list-service> element of the <group> element of an existing MCS group document if the authenticated identity is in authorized GMS list specified in subclause 6.2.5.1.

An authenticated identity is authorized to subscribe to notification of changes of an MCS group document if:

- 1) the authenticated identity is a member of an MCS group defined by a <list-service> element of the <group> element of the MCS group document;
- 2) the authenticated identity is listed in the authorized MCS server list specified in subclause 6.2.5.1; or
- 3) the authenticated identity is listed in the authorized GMS list specified in subclause 6.2.5.1 and the subscription is on behalf of a constituent MCS group of the MCS group defined by the MCS group document."

[ETSI TS 124 481 [29] (3GPP TS 24.481) clause 6.3.2.3]

"Upon reception of an HTTP PUT request where the Request-URI of the HTTP PUT request identifies an XML document of the application usage specified in subclause 7.2

then the GMS:

- a) shall determine the identity of the sender of the received HTTP PUT request as specified in subclause 6.2.5;
- b) if the identity of the sender of the received HTTP PUT request is not authorized to initiate group creation, shall respond with a HTTP 403 (Forbidden) response to the HTTP PUT request and shall not continue with rest of the steps;
- c) if value of the "uri" attribute of the <list-service> element of the <group> element of the XML document specified in subclause 7.2.1 of the received HTTP PUT request does not conform to local policy, shall respond with an HTTP 409 (Conflict) response to the HTTP PUT request. The <uniqueness-failure> error element shall identify the error condition. The GMS shall include at least one <alt-value> element in the <uniqueness-failure> error element, whereby each <alt-value> element contains an MCS Group ID acceptable for the GMS. The GMS shall not continue with rest of the steps; and
- d) shall support receiving an XML document of the application usage specified in subclause 7.2.1 according to procedures specified in IETF RFC 4825 [22] "PUT Handling" where the Request-URI of the HTTP PUT request identifies an XML document of the application usage specified in subclause 7.2."

[ETSI TS 124 481 [29] (3GPP TS 24.481) clause 6.3.14.3.1]

"Upon reception of an HTTP POST request:

- a) with a Request-URI with an XCAP URI identifying a non-existing group document; and
- b) with an application/vnd.3gpp.GMOP+xml MIME body containing a GMOP document requesting group regroup creation specified in subclause 7.3.4.3;

then the GMS:

- a) shall determine the identity of the sender of the received HTTP POST request as specified in subclause 6.2.5;
- ...
- d) for each MCS group ID of an MCS group to be combined indicated in content of a <constituent-MCPTT-group-ID> element of the <constituent-MCPTT-group-IDs> element of the <on-network-temporary> element of the group document of the <group> element of the GMOP document requesting group regroup creation specified in subclause 7.3.4.3 of the received HTTP POST request:
 - 1) shall send a HTTP POST request according to procedures specified in IETF RFC 2616 [21] and subclause 6.2.5. In the HTTP POST request, the GMS:
 - A) shall set the Request-URI to an XCAP URI:
 - i) with the document selector identifying a group document addressed by a group ID as specified in subclause 7.2.10.2, where the group ID is set to the MCS group ID of the MCS group to be combined;
 - ii) with the node selector identifying a <on-network-regrouped> element of the constituent MCS group such that the <on-network-regrouped> element has the "temporary-MCPTT-group-ID" attribute set to the content of the "uri" attribute of the <list-service> element of the group document included in the received HTTP POST request;
 - iii) if the MCS group ID of the MCS group to be combined is owned by the MCS provider of the GMS, with the XCAP root URI of the MCS provider of the GMS; and
 - iv) if the MCS group ID of the MCS group to be combined is owned by an MCS provider other than the MCS provider of the GMS, with XCAP root URI derived using the group ID routing database as specified in subclause 6.2.5.2 and the MCS group ID of the MCS group to be combined;
 - B) shall set the X-3GPP-Asserted-Identity header field as specified in 3GPP TS 24.482 [10] to a public service identity of the GMS; and
 - C) shall include an application/vnd.3gpp.GMOP+xml MIME body containing a GMOP document requesting group regroup check specified in subclause 7.3.4.4 with a <on-network-regrouped> element. In the <on-network-regrouped> element, the GMS:
 - i) shall set the "temporary-MCPTT-group-ID" attribute to the content of the "uri" attribute of the <list-service> element of the group document included in the received HTTP POST request;
 - ii) shall set the "temporary-MCPTT-group-requestor" attribute to the identity of the sender of the received HTTP POST request;
 - iii) shall include the <constituent-MCPTT-group-IDs> element set to content of the <constituent-MCPTT-group-IDs> element of <on-network-temporary> element of the <list-service> element of the group document of the MCS group included in the received HTTP POST request;
 - iv) if an <on-network-group-priority> element is included in the <list-service> element of the group document included in the received HTTP POST request, shall include the <on-network-group-priority> element set to content of the <on-network-group-priority> element of the <list-service> element of the group document included in the received HTTP POST request;
 - v) if a <protect-media> element is included in the <list-service> element of the group document included in the received HTTP POST request, shall include the <protect-media> element set to content of the <protect-media> element of the <list-service> element of the group document included in the received HTTP POST request;

- vi) if a *<protect-floor-control-signalling>* element is included in the *<list-service>* element of the group document included in the received HTTP POST request, shall include the *<protect-floor-control-signalling>* element set to content of the *<protect-floor-control-signalling>* element of the *<list-service>* element of the group document included in the received HTTP POST request; and
- vii) if a *<require-multicast-floor-control-signalling>* element is included in the *<list-service>* element of the group document included in the received HTTP POST request, shall include the *<require-multicast-floor-control-signalling>* element.

...

Upon reception of HTTP 2xx responses to all sent HTTP POST requests, the GMS:

- a) for each MCS group ID of an MCS group to be combined indicated in content of a *<constituent-MCPTT-group-ID>* element of the *<constituent-MCPTT-group-IDs>* element of the *<on-network-temporary>* element of the *<group>* element of the GMOP document requesting group regroup creation specified in subclause 7.3.4.3 of the received HTTP POST request:
 - 1) shall send an HTTP POST request according to procedures specified in IETF RFC 2616 [21] and subclause 6.2.5. In the HTTP POST request, the GMS:
 - A) shall set the Request-URI to an XCAP URI:
 - i) with the document selector identifying a group document addressed by a group ID as specified in subclause 7.2.10.2, where the group ID is set to the MCS group ID of the MCS group to be combined;
 - ii) with the node selector identifying a *<on-network-regrouped>* element of the constituent MCS group such that the *<on-network-regrouped>* element has the "temporary-MCPTT-group-ID" attribute set to the content of the "uri" attribute of the *<list-service>* element of the group document included in the received HTTP POST request;
 - iii) if the MCS group ID of the MCS group to be combined is owned by the MCS provider of the GMS, with the XCAP root URI of the MCS provider of the GMS; and
 - iv) if the MCS group ID of the MCS group to be combined is owned by an MCS provider other than the MCS provider of the GMS, with XCAP root URI derived using the group ID routing database as specified in subclause 6.2.5.2 and the MCS group ID of the MCS group to be combined;
 - B) shall set the X-3GPP-Asserted-Identity header field as specified in 3GPP TS 24.482 [10] to a public service identity of the GMS; and
 - C) shall include an application/vnd.3gpp.GMOP+xml MIME body with a GMOP document requesting group regroup notification specified in subclause 7.3.4.5. In the GMOP document requesting group regroup notification, the GMS:
 - i) shall include a *<on-network-regrouped>* element. In the *<on-network-regrouped>* element, the GMS:
 - shall set the "temporary-MCPTT-group-ID" attribute to the content of the "uri" attribute of the *<list-service>* element of the group document included in the received HTTP POST request;
 - shall set the "temporary-MCPTT-group-requestor" attribute to the identity of the sender of the received HTTP POST request;
 - shall include the *<constituent-MCPTT-group-IDs>* element set to content of the *<constituent-MCPTT-group-IDs>* element of *<on-network-temporary>* element of the *<list-service>* element of the group document of the MCS group included in the received HTTP POST request;

- if an `<on-network-group-priority>` element is included in the `<list-service>` element of the group document included in the received HTTP POST request, shall include the `<on-network-group-priority>` element set to content of the `<on-network-group-priority>` element of the `<list-service>` element of the group document included in the received HTTP POST request;
- if a `<protect-media>` element is included in the `<list-service>` element of the group document included in the received HTTP POST request, shall include the `<protect-media>` element set to content of the `<protect-media>` element of the `<list-service>` element of the group document included in the received HTTP POST request;
- if a `<protect-floor-control-signalling>` element is included in the `<list-service>` element of the group document included in the received HTTP POST request, shall include the `<protect-floor-control-signalling>` element set to content of the `<protect-floor-control-signalling>` element of the `<list-service>` element of the group document included in the received HTTP POST request; and
- if a `<require-multicast-floor-control-signalling>` element is included in the `<list-service>` element of the group document included in the received HTTP POST request, shall include the `<require-multicast-floor-control-signalling>` element.

NOTE: GMK is not included in the GMOP document requesting group regroup notification as GMK is provided only using SIP.

Upon reception of HTTP 2xx responses to all sent HTTP POST requests, the GMS shall create the group document of the temporary MCS group at the location specified by the Request-URI of the received HTTP POST request and shall send an HTTP 2xx response to the received HTTP request. In the HTTP 2xx response, the GMS shall include an `application/vnd.3gpp.GMOP+xml` MIME body containing a GMOP document with group regroup creation response specified in subclause 7.3.4.6 with a `<temporary-group-document-ETag>` element set to the current value of the entity tag for the created group document of the temporary MCS group."

[ETSI TS 124 481 [29] (3GPP TS 24.481) clause 6.3.15.3.1]

"Upon reception of an HTTP DELETE request with Request-URI with an XCAP URI identifying a group document of a temporary MCS group, the GMS:

- a) for each constituent MCS group indicated in the group document indicated by Request-URI:
 - 1) shall send an HTTP DELETE request. In the HTTP DELETE request, the GMS:
 - A) shall set the Request-URI to an XCAP URI:
 - i) with the document selector identifying a group document addressed by a group ID as specified in subclause 7.2.10.2, where the group ID is set to the MCS group ID of the constituent MCS group;
 - ii) with the node selector identifying a `<on-network-regrouped>` element of the constituent MCS group, such that the "temporary-MCPTT-group-ID" attribute of the `<on-network-regrouped>` element contains the temporary MCS group ID of the temporary MCS group;
 - iii) if the MCS group ID of the constituent MCS group is owned by the MCS provider of the GMS, with the XCAP root URI of the MCS provider of the GMS; and
 - iv) if the MCS group ID of the constituent MCS group is owned by an MCS provider other than the MCS provider of the GMS, with XCAP root URI derived using the group ID routing database as specified in subclause 6.2.5.2 and the MCS group ID of the constituent MCS group; and
 - B) shall set the X-3GPP-Asserted-Identity header field as specified in 3GPP TS 24.482 [10] to a public service identity of the GMS.

Upon reception of an HTTP response to all sent HTTP DELETE requests, the GMS shall remove the group document of the temporary MCS group and shall send an HTTP 2xx response to the received HTTP request."

5.2.3 Test description

5.2.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Group Management Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The IUT (MCVideo Server) is connected to the SS-UE1 (MCVideo Client) as defined in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Figure 4.2.4, where term "MCPTT" is replaced with "MCVideo".
- The SS-UE1 (MCVideo Client) performs the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in subclause 5.1.
- The SS-UE1 (MCVideo Client) is member of group A.

5.2.3.2 Test procedure sequence

Table 5.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Server Terminated Group Creation' as described in Annex A, Table A.2.4.3-1 to create group B?	-	-	1	P
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Server Terminated Temporary Group Creation' as described in Annex A, Table A.2.5.3-1 to create temporary group T?	-	-	2	P
3	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Server Originated notifications regarding temporary group creation or tear down' as described in Annex A, Table A.2.3.3-1 to update the group document of group A and retrieve the GMK for the temporary group T?	-	-	2	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Server Terminated Temporary Group Tear Down' as described in Annex A, Table A.2.6.3-1 to delete temporary group T?	-	-	3	P
5	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Server Originated notifications regarding temporary group creation or tear down' as described in Annex A, Table A.2.3.3-1 to update the group document and the GKTP document of group A?	-	-	3	P

5.2.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications:

Subclauses referring to messages from UE relate to SS-UE1 (MCVideo Client).

5.3 MCVIDEO Server - MCVIDEO Client / Configuration / Group Affiliation / Implicit Affiliation / Remote change / De-affiliation / Home MCVIDEO system

5.3.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a
pointer to the group information, indicating that the MCVideo Client is authorized to affiliate with
the specified group }
ensure that {
  when { the SS-UE1 (MCVideo client ) requests for own affiliation status and to subscribe to
affiliation status changes for the MCVideo User with SIP SUBSCRIBE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends a SIP NOTIFY message
}
}
```

(2)

```
with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a
pointer to the group information, indicating that the MCVideo Client is authorized to affiliate with
the specified group }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests to de-affiliate user A from an MCVideo group with SIP
PUBLISH }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends SIP NOTIFY message to
inform the change progress status and sends SIP NOTIFY message to inform the final status }
}
```

(3)

```
with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a
pointer to the group information, indicating that the MCVideo Client is authorized to affiliate with
the specified group }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests to affiliate user A to an MCVideo group with SIP
PUBLISH message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends SIP NOTIFY message to
inform the change progress status and sends SIP NOTIFY message to inform the final status }
}
```

(4)

with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a pointer to the group information, indicating that the MCVideo Client is authorized to affiliate with the specified group }

ensure that {

when { the SS-UE2 (MCVideo Client) requests to de-affiliate user B from an MCVideo group with SIP PUBLISH message }

then { IUT (MCVideo Server) responds with a SIP 200 (OK) message **and** sends SIP NOTIFY message to inform the change progress status **and** sends SIP NOTIFY message to inform the final status }

(5)

with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a pointer to the group information, indicating that the MCVideo Client is allowed to make affiliation changes for another user with the specified group }

ensure that {

when { the SS-UE1 (MCVideo client) requests to affiliate status changes of targeted user with SIP SUBSCRIBE message }

then { IUT (MCVideo Server) responds with a SIP 200 (OK) message **and** sends a SIP NOTIFY message }

(6)

with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a pointer to the group information, indicating that the MCVideo Client is allowed to make affiliation changes for another user with the specified group }

ensure that {

when { the SS-UE1 (MCVideo Client) requests to affiliate targeted user B to an MCVideo group via mandatory mode with SIP PUBLISH message }

then { IUT (MCVideo Server) responds with a SIP 200 (OK) message **and** sends SIP NOTIFY message to inform the change progress status **and** sends SIP NOTIFY message to inform the final status }

(7)

with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a pointer to the group information, indicating that the MCVideo Client is allowed to make affiliation changes for another user with the specified group }

ensure that {

when { the SS-UE1 (MCVideo Client) requests to de-affiliate targeted user from an MCVideo group via mandatory mode with SIP PUBLISH message }

then { IUT (MCVideo Server) responds to the SS-UE1 (MCVideo Client) with a SIP 200 (OK) message **and** sends SIP NOTIFY message to inform the change progress status **and** sends SIP NOTIFY message to inform the final status }

(8)

with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a pointer to the group information, indicating that the MCVideo Client is allowed to make affiliation changes for another user with the specified group }

ensure that {

when { SS-UE1 (MCVideo Client) requests that a target user B be affiliated to an MCVideo group via negotiated mode by sending a SIP MESSAGE message }

then { IUT (MCVideo Server) responds with a SIP 200 (OK) }

(9)

with { MCVideo Client already affiliated to the MCVideo group }

ensure that {

when { the SS-UE1 (MCVideo Client) requests to affiliate targeted user to a group via negotiated mode }

then { IUT (MCVideo Server) informs user B about a remote request by sending a SIP MESSAGE message to the SS-UE2 (MCVideo Client) }

(10)

```

with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a
pointer to the group information, indicating that the MCVideo Client is authorized to affiliate with
the specified group }
ensure that {
  when { the SS-UE2 (MCVideo Client) requests to affiliate user B to an MCVideo group with SIP
PUBLISH message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends SIP NOTIFY message to
inform the change progress status and sends SIP NOTIFY message to inform the final status }
}

```

(11)

```

with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a
pointer to the group information, indicating that the MCVideo Client is allowed to make affiliation
changes for another user with the specified group }
ensure that {
  when { SS-UE1 (MCVideo Client) requests that a target user B be de-affiliated to an MCVideo group
via negotiated mode by sending a SIP MESSAGE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) }
}

```

(12)

```

with { MCVideo Client already de-affiliated from the MCVideo group }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests to de-affiliate targeted user to a group via
negotiated mode }
  then { IUT (MCVideo Server) informs user B about a remote request by sending a SIP MESSAGE
message to the SS-UE2 (MCVideo Client) }
}

```

(13)

```

with { IUT (MCVideo Server) having received the provisioned MCVideo Client's group information or a
pointer to the group information, indicating that the MCVideo Client is authorized to affiliate with
the specified group}
ensure that {
  when { the SS-UE1 (MCVideo client ) requests to de-subscribe from affiliation status changes for
the MCVideo User with SIP SUBSCRIBE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends a SIP NOTIFY message
}
}

```

5.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: ETSI TS 124 481 [29] (3GPP TS 24.481), clauses 5.4, 5.2A, 6.2.4, 6.3.3.3, 6.3.13.3.2.2, 6.3.13.3.3, 7.2.12.1, ETSI TS 124 281 [8] (3GPP TS 24.281) clauses 8.2.2.2.3, 8.2.2.2.4, 8.2.2.2.5, 8.2.2.2.8 and 8.2.2.2.15. Unless otherwise stated these are Rel-14 requirements.

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 5.4]

"To be compliant with the procedures in the present document, an MCVideo server shall support role of an MCS server as specified in subclause 5.2A."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 5.2A]

"To be compliant with the procedures in the present document, an MCS server:

- *shall support the role of XCAP client as specified in IETF RFC 4825 [22];*
- *shall support the role of XDMC as specified in OMA OMA-TS-XDM_Group-V1_1_1 [3];*
- *shall support the procedure in subclause 6.2.4;*
- *shall support the procedure in subclause 6.3.3.2.3; and*
- *shall support the procedure in subclause 6.3.13.2.2."*

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.2.4]

"The MCPTT server shall send the HTTP request as specified for the HTTP client in the network entity in annex A of 3GPP TS 24.382 [10].

The MCPTT server shall perform the procedures in subclause 6.2.2 specified for GC."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.3.3.3]

"A GMS shall support handling an HTTP GET request from a GMC according to procedures specified in IETF RFC 4825 [22] "GET Handling" where the Request-URI of the HTTP GET request identifies an XML document of the application usage specified in subclause 7.2."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.3.13.3.2.2]

"Upon reception of an initial SIP SUBSCRIBE request:

- a) *with the Event header field set to xcap-diff;*
- b) *with the Request-URI set to own public service identity for performing subscription proxy function of the GMS;*
- c) *with a P-Asserted-Identity header field not containing an identity listed in the authorized MCPTT server list specified in subclause 6.2.5.1 and not containing an identity listed in the authorized GMS list as specified in subclause 6.2.5.1;*
- d) *with an application/vnd.3gpp.mcptt-info+xml MIME body containing the <mcptt-access-token> element;*
- e) *with an application/resource-lists+xml MIME body; and*
- f) *with the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24 229 [12]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];*

the GMS:

- a) *if an <EncryptedData> XML tag is included in the application/vnd.3gpp.mcptt-info+xml MIME body and the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/vnd.3gpp.mcptt-info+xml MIME body;*
- b) *if an <EncryptedData> XML tag is included in the application/resource-lists+xml MIME body and the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/resource-lists+xml MIME body;*
- c) *shall identify the originating MCPTT ID from <mcptt-access-token> element received in the application/vnd.3gpp.mcptt-info+xml MIME body and shall use the originating MCPTT ID as an authenticated identity when performing the authorization;*
- d) *if the authenticated identity is not authorized to subscribe to notification of changes of any resource in the application/resource-lists+xml MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps;*
- e) *act as a notifier according to IETF RFC 5875 [13]. Additionally, if an XCAP URI in the "uri" attribute of the <entry> element of the application/resource-lists+xml MIME body of the initial SIP SUBSCRIBE request identifies:*
 - 1) *a group document addressed by a group ID as described in subclause 7.2.10.2 where the group ID is an MCPTT group ID owned by an MCPTT provider other than the MCPTT provider of the GMS; or*
 - 2) *a element of an MCPTT GKTP document as described in subclause 7.7.10 where the group ID is an MCPTT group ID owned by an MCPTT provider other than the MCPTT provider of GMS;*

shall perform the procedure in subclause 6.3.13.3.2.4 for each such MCPTT group ID and shall interwork information of received SIP NOTIFY requests in subclause 6.3.13.3.2.4 in SIP NOTIFY requests associated with a subscription created as result of the received initial SIP SUBSCRIBE request.

Upon sending a SIP NOTIFY request associated with a subscription created as result of the received initial SIP SUBSCRIBE request, if the CSK is received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, the GMS shall perform the confidentiality protection procedures and integrity protection procedures defined in 3GPP TS 24.379 [5] for MCPTT server.

Upon reception of a SIP re-SUBSCRIBE request:

- a) with the Event header field set to xcap-diff; and
- b) with an application/resource-lists+xml MIME body;

the GMS:

- a) if an <EncryptedData> XML tag is included in the application/resource-lists+xml MIME body of the received SIP re-SUBSCRIBE request and the CSK was received in an application/mikey MIME body of the initial SIP SUBSCRIBE request, shall decrypt the application/resource-lists+xml MIME body; and
- b) act as a notifier according to IETF RFC 5875 [13]. Additionally, if an XCAP URI in the "uri" attribute of the <entry> element of the application/resource-lists+xml MIME body of the SIP re-SUBSCRIBE request identifies:
 - 1) a group document addressed by a group ID as described in subclause 7.2.10.2 where the group ID is an MCPTT group ID owned by an MCPTT provider other than the MCPTT provider of the GMS; or
 - 2) a element of an MCPTT GKTP document as described in subclause 7.7.10 where the group ID is an MCPTT group ID owned by an MCPTT provider other than the MCPTT provider of GMS;

and for which there is no related subscription established according to the subclause 6.3.13.3.2.4, shall perform the procedure in subclause 6.3.13.3.2.4 for each such MCPTT group ID and shall interwork information of received SIP NOTIFY requests in subclause 6.3.13.3.2.4 in SIP NOTIFY requests associated with a subscription created as result of the received initial SIP SUBSCRIBE request."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 6.3.13.3.3]

"Upon reception of an initial SIP SUBSCRIBE request:

- a) with the Event header field set to xcap-diff;
- b) with the Request-URI set to own public service identity for accessing documents;
- c) with a P-Asserted-Identity header field containing an identity listed in the authorized GMS list as specified in subclause 6.2.5.1;
- d) with an application/resource-lists+xml MIME body;
- e) with an application/vnd.3gpp.mcptt-info+xml MIME body; and
- f) with the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcptt" (coded as specified in 3GPP TS 24 229 [12]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

the GMS:

- a) if the <mcptt-calling-user-id> element is included in the application/vnd.3gpp.mcptt-info+xml MIME body:
 - 1) shall use the <mcptt-calling-user-id> element value as an authenticated identity when performing the authorization; and
 - 2) if the authenticated identity is not authorized to subscribe to notification of changes of any document or element in the application/resource-lists+xml MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps;
- b) if the <mcptt-calling-group-id> element is included in the application/vnd.3gpp.mcptt-info+xml MIME body:
 - 1) when performing the authorization, shall use URI of the P-Asserted-Identity header field as an authenticated identity and shall determine that the subscription is on behalf of the identity in the <mcptt-calling-group-id> element;

- 2) if the authenticated identity is not authorized to subscribe to notification of changes of any document or element in the application/resource-lists+xml MIME body, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps; and
 - 3) if the MCS group ID indicated in the <mcptt-calling-group-id> element is a constituent MCS group of a temporary MCS group and the documents or elements indicated in the application/resource-lists+xml MIME body are not associated with the temporary MCS group ID, shall reject the request with a SIP 403 (Forbidden) response and shall not continue with rest of the steps; and
- c) shall act as a notifier according to IETF RFC 5875 [13]."

[ETSI TS 124 481 [29] (3GPP TS 24.481), clause 7.2.12.1]

"Authorization policies are described in the OMA OMA-TS-XDM_Group-V1_1_1 [3] "Authorization policies".

An authenticated identity is authorized to read the <group> element of an MCS group document.

An authenticated identity is authorized to read a <list-service> element of the <group> element of the MCS group document and any descendant elements of the <list-service> element:

- a) except a <list> element of the <list-service> element; and
- b) except descendant elements of the <list> element of the <list-service> element;

if the authenticated identity is a member of an MCS group defined by the <list-service> element.

An authenticated identity is authorized to read a <list> element of a <list-service> element of the <group> element of an MCS group document and any descendant elements of the <list> element if:

- a) the authenticated identity is a member of MCS group defined by the <list-service> element; and
- b) the MCS group document contains a <rule> element:
 - 1) with the <conditions> element evaluating to true for the authenticated identity or without the <conditions> element; and
 - 2) with the <actions> element containing the <on-network-allow-getting-member-list> element.

An authenticated identity is authorized to read an <entry> element of a <list> element of a <list-service> element of the <group> element of the MCS group document and any descendant elements of the <entry> element if:

- a) the "uri" attribute of the <entry> element contains the authenticated identity;
- b) the "uri" attribute of the <mcvideo-mcvideo-id> element of the <entry> element contains the authenticated identity; or
- c) the "uri" attribute of the <mcddata-mcddata-id> element of the <entry> element contains the authenticated identity.

An authenticated identity is authorized to read an MCS group document if the authenticated identity is listed in the authorized MCS server list specified in subclause 6.2.5.1.

An authenticated identity is authorized to create, read, modify and delete an MCS group document if the MCS group document is stored:

- a) in users tree of the XUI equal to the authenticated identity; or
- b) in users tree of the another XUI, subject to MCS service provider policy. The MCS service provider policy can specified e.g. using an appropriate access permissions document specified in OMA OMA-TS-XDM_Core-V2_1 [2], stored in the user's tree of the other XUI;

and unless precluded by other statement of this subclause.

None is authorized to create, delete, and modify a <on-network-temporary> element of a <list-service> element of the <group> element of an existing MCS group document.

None is authorized to delete a group document containing a <on-network-regrouped> element of a <list-service> element of the <group> element of an MCS group document.

An authenticated identity is authorized to create and delete a <on-network-regrouped> element in the <list-service> element of the <group> element of an existing MCS group document if the authenticated identity is in authorized GMS list specified in subclause 6.2.5.1.

An authenticated identity is authorized to subscribe to notification of changes of an MCS group document if:

- 1) the authenticated identity is a member of an MCS group defined by a <list-service> element of the <group> element of the MCS group document;
- 2) the authenticated identity is listed in the authorized MCS server list specified in subclause 6.2.5.1; or
- 3) the authenticated identity is listed in the authorized GMS list specified in subclause 6.2.5.1 and the subscription is on behalf of a constituent MCS group of the MCS group defined by the MCS group document."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 8.2.2.2.3]

"Upon receiving a SIP PUBLISH request such that:

- 1) Request-URI of the SIP PUBLISH request contains either the public service identity identifying the originating participating MCVideo function serving the MCVideo user, or the public service identity identifying the terminating participating MCVideo function serving the MCVideo user;
- 2) the SIP PUBLISH request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> element which identifies an MCVideo ID served by the MCVideo server;
- 3) 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];
- 4) the Event header field of the SIP PUBLISH request contains the "presence" event type; and
- 5) SIP PUBLISH request contains an application/pidf+xml MIME body indicating per-user affiliation information according to clause 8.3.1;

then the MCVideo server:

- 1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;
- 2) if the Request-URI of the SIP PUBLISH request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP PUBLISH request;
- 3) if the Request-URI of the SIP PUBLISH request contains the public service identity identifying the terminating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;
- 4) if the originating MCVideo ID is different than the served MCVideo ID and the originating MCVideo ID is not authorized to modify affiliation status of the served MCVideo ID, shall send a 403 (Forbidden) response and shall not continue with the rest of the steps;
- 5) if the Expires header field of the SIP PUBLISH request is not included or has nonzero value lower than 4294967295, shall send a SIP 423 (Interval Too Brief) response to the SIP PUBLISH request, where the SIP 423 (Interval Too Brief) response contains a Min-Expires header field set to 4294967295, and shall not continue with the rest of the steps;
- 6) if the Expires header field of the SIP PUBLISH request has nonzero value, shall determine the candidate expiration interval to according to IETF RFC 3903 [12];
- 7) if the Expires header field of the SIP PUBLISH request has zero value, shall set the candidate expiration interval to zero;

- 8) shall respond with SIP 200 (OK) response to the SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12]. In the SIP 200 (OK) response, the MCVideo server:
 - a) shall set the Expires header field according to IETF RFC 3903 [12], to the candidate expiration time;
- 9) if the "entity" attribute of the <presence> element of the application/pidf+xml MIME body of the SIP PUBLISH request is different than the served MCVideo ID, shall not continue with the rest of the steps;
- 10) shall identify the served MCVideo client ID in the "id" attribute of the <tuple> element of the <presence> element of the application/pidf+xml MIME body of the SIP PUBLISH request;
- 11) shall consider an MCVideo user information entry such that:
 - a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and
 - b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;
 as the served MCVideo user information entry;
- 12) shall consider an MCVideo client information entry such that:
 - a) the MCVideo client information entry is in the list of MCVideo client information entries of the served MCVideo user information entry; and
 - b) the MCVideo client ID of the MCVideo client information entry is equal to the served MCVideo client ID;
 as the served MCVideo client information entry;
- 13) shall consider a copy of the list of the MCVideo group information entries of the served MCVideo client information entry as the served list of the MCVideo group information entries;
- 14) if the candidate expiration interval is nonzero:
 - a) shall construct the candidate list of the MCVideo group information entries as follows:
 - i) for each MCVideo group ID which has an MCVideo group information entry in the served list of the MCVideo group information entries, such that the expiration time of the MCVideo group information entry has not expired yet, and which is indicated in a "group" attribute of an <affiliation> element of the <status> element of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request:
 - A) shall copy the MCVideo group information entry into a new MCVideo group information entry of the candidate list of the MCVideo group information entries;
 - B) if the affiliation status of the MCVideo group information entry is "deaffiliating" or "deaffiliated", shall set the affiliation status of the new MCVideo group information entry to the "affiliating" state and shall reset the affiliating p-id of the new MCVideo group information entry; and
 - C) shall set the expiration time of the new MCVideo group information entry to the current time increased with the candidate expiration interval;
 - ii) for each MCVideo group ID which has an MCVideo group information entry in the served list of the MCVideo group information entries, such that the expiration time of the MCVideo group information entry has not expired yet, and which is not indicated in any "group" attribute of the <affiliation> element of the <status> element of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request:
 - A) shall copy the MCVideo group information entry into a new MCVideo group information entry of the candidate list of the MCVideo group information entries; and

- B) if the affiliation status of the MCVideo group information entry is "affiliated" or "affiliating":
 - shall set the affiliation status of the new MCVideo group information entry to the "de-affiliating" state; and
 - shall set the expiration time of the new MCVideo group information entry to the current time increased with twice the value of timer F; and
 - iii) for each MCVideo group ID:
 - A) which does not have an MCVideo group information entry in the served list of the MCVideo group information entries; or
 - B) which has an MCVideo group information entry in the served list of the MCVideo group information entries, such that the expiration time of the MCVideo group information entry has already expired;

and which is indicated in a "group" element of the <affiliation> element of the <status> element of the <tuple> element of the <presence> root element of the application/pdf+xml MIME body of the SIP PUBLISH request:

 - A) shall add a new MCVideo group information entry in the candidate list of the MCVideo group information list for the MCVideo group ID;
 - B) shall set the affiliation status of the new MCVideo group information entry to the "affiliating" state;
 - C) shall set the expiration time of the new MCVideo group information entry to the current time increased with the candidate expiration interval; and
 - D) shall reset the affiliating p-id of the new MCVideo group information entry;
 - b) determine the candidate number of MCVideo group IDs as number of different MCVideo group IDs which have an MCVideo group information entry:
 - i) in the candidate list of the MCVideo group information entries; or
 - ii) in the list of the MCVideo group information entries of an MCVideo client information entry such that:
 - A) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry; and
 - B) the MCVideo client ID of the MCVideo client information entry is not equal to the served MCVideo client ID;

with the affiliation status set to the "affiliating" state or the "affiliated" state and with the expiration time which has not expired yet; and
 - c) if the candidate number of MCVideo group IDs is bigger than N2 value of the served MCVideo ID, shall based on MCVideo service provider policy reduce the candidate MCVideo group IDs to that equal to N2;
- NOTE: The MCVideo service provider policy can determine to remove an MCVideo group ID based on the order it appeared in the PUBLISH request or based on the importance or priority of the MCVideo group or some other policy to determine which MCVideo groups are preferred.
- 15) if the candidate expiration interval is zero, constructs the candidate list of the MCVideo group information entries as follows:
- a) for each MCVideo group ID which has an entry in the served list of the MCVideo group information entries:
 - i) shall copy the MCVideo group entry of the served list of the MCVideo group information into a new MCVideo group information entry of the candidate list of the MCVideo group information entries;

- ii) shall set the affiliation status of the new MCVideo group information entry to the "de-affiliating" state; and
 - iii) shall set the expiration time of the new MCVideo group information entry to the current time increased with twice the value of timer F;
- 16) shall replace the list of the MCVideo group information entries stored in the served MCVideo client information entry with the candidate list of the MCVideo group information entries;
 - 17) shall perform the procedures specified in clause 8.2.2.2.6 for the served MCVideo ID and each MCVideo group ID:
 - a) which does not have an MCVideo group information entry in the served list of the MCVideo group information entries and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with the affiliation status set to the "affiliating" state;
 - b) which has an MCVideo group information entry in the served list of the MCVideo group information entries with the expiration time already expired, and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with the affiliation status set to the "affiliating" state;
 - c) which has an MCVideo group information entry in the served list of the MCVideo group information entries with the affiliation status set to the "deaffiliating" state or the "deaffiliated" state and with the expiration time not expired yet, and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with the affiliation status set to the "affiliating" state; or
 - d) which has an MCVideo group information entry in the served list of the MCVideo group information entries with the affiliation status set to the "affiliated" state and with the expiration time not expired yet, and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with the affiliation status set to the "de-affiliating" state;
 - 18) shall identify the handled p-id in the <p-id> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request; and
 - 19) shall perform the procedures specified in clause 8.2.2.2.5 for the served MCVideo ID."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 8.2.2.2.4]

"Upon receiving a SIP SUBSCRIBE request such that:

- 1) Request-URI of the SIP SUBSCRIBE request contains either the public service identity identifying the originating participating MCVideo function serving the MCVideo user, or the public service identity identifying the terminating participating MCVideo function serving the MCVideo user;
- 2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> element which identifies an MCVideo ID served by the MCVideo server;
- 3) 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
- 4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type;

the MCVideo server:

- 1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;
- 2) if the Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE request;
- 3) if the Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the terminating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

- 4) if the originating MCVideo ID is different than the served MCVideo ID and the originating MCVideo ID is not authorized to modify affiliation status of the served MCVideo ID, shall send a 403 (Forbidden) response and shall not continue with the rest of the steps; and
- 5) shall generate a 200 (OK) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16].

For the duration of the subscription, the MCVideo server shall notify the subscriber about changes of the information of the served MCVideo ID, as described in clause 8.2.2.2.5."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 8.2.2.2.5]

"In order to notify the subscriber about changes of the served MCVideo ID, the MCVideo server:

- 1) shall consider an MCVideo user information entry such that:
 - a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and
 - b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;
 as the served MCVideo user information entry;
- 2) shall consider the list of the MCVideo client information entries of the served MCVideo user information entry as the served list of the MCVideo client information entries;
- 3) shall generate an application/pidf+xml MIME body indicating per-user affiliation information according to clause 9.3.1 and the served list of the MCVideo client information entries with the following clarifications:
 - a) the MCVideo server shall not include information from an MCVideo group information entry with the expiration time already expired;
 - b) the MCVideo server shall not include information from an MCVideo group information entry with the affiliation status set to the "deaffiliated" state;
 - c) if the SIP SUBSCRIBE request creating the subscription of this notification contains an application/simple-filter+xml MIME body according to clause 8.3.2, the MCVideo server shall restrict the application/pidf+xml MIME body according to the application/simple-filter+xml MIME body; and
 - d) if this procedure is invoked by procedure in clause 8.2.2.2.3 where the handled p-id value was identified, the MCVideo server shall set the <p-id> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP NOTIFY request to the handled p-id value; and
- 4) send a SIP NOTIFY request according to 3GPP TS 24.229 [11], and IETF RFC 6665 [16] with the MIME body. In the SIP NOTIFY request, the MCVideo server shall include the generated application/pidf+xml MIME body indicating per-user affiliation information."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 8.2.2.2.8]

"Upon receiving a SIP MESSAGE request such that:

- 1) Request-URI of the SIP MESSAGE request contains the public service identity identifying the terminating participating MCVideo function serving the MCVideo user;
- 2) the SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> element and the <mcvideo-calling-user-id> element;
- 3) 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
- 4) the SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-affiliation-command+xml MIME body;

then the MCVideo server:

- 1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP MESSAGE request;

- 2) shall identify the originating MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP MESSAGE request;
- 3) if the originating MCVideo ID is not authorized to send an affiliation status change request in negotiated mode to the served MCVideo ID, shall send a 403 (Forbidden) response and shall not continue with the rest of the steps;
- 4) shall set the Request-URI of the SIP MESSAGE request to the public user identity bound to the served MCVideo ID in the MCVideo server; and
- 5) 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];

before forwarding the SIP MESSAGE request further."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 8.2.2.2.15]

"This clause is referenced from other procedures.

If the participating MCVideo function has successfully performed service authorisation for the MCVideo ID identified in the service authorisation procedure, the participating MCVideo function:

- 1) shall identify the MCVideo ID included in the SIP request received for service authorisation procedure as the served MCVideo ID;
- 2) shall identify the MCVideo client ID from the <mcvideo-client-id> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body included in the SIP request received for service authorisation as the served MCVideo client ID;
- 3) shall download the MCVideo user profile from the MCVideo user database if not already stored at the participating MCVideo function;
- 4) if no <ImplicitAffiliations> element is contained in the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID or the <ImplicitAffiliations> element contains no <entry> elements containing an MCVideo group ID, shall skip the remaining steps;
- 5) shall consider an MCVideo user information entry such that:
 - a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and
 - b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;
 as the served MCVideo user information entry;
- 6) shall consider an MCVideo client information entry such that:
 - a) the MCVideo client information entry is in the list of MCVideo client information entries of the served MCVideo user information entry; and
 - b) the MCVideo client ID of the MCVideo client information entry is equal to the served MCVideo client ID;
 as the served MCVideo client information entry;
- 7) shall consider a copy of the list of the MCVideo group information entries of the served MCVideo client information entry as the served list of the MCVideo group information entries;
- 8) shall construct the candidate list of the MCVideo group information entries as follows:
 - a) for each MCVideo group ID which has an MCVideo group information entry in the served list of the MCVideo group information entries shall copy the MCVideo group information entry into a new MCVideo group information entry of the candidate list of the MCVideo group information entries;

- b) for each MCVideo group ID contained in an <entry> element of the <ImplicitAffiliations> element in the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID that does not have an MCVideo group information entry in the served list of the MCVideo group information entries or has an MCVideo group information entry in the served list of the MCVideo group information entries such that the expiration time of the MCVideo group information entry has already expired:
 - i) shall add a new MCVideo group information entry in the candidate list of the MCVideo group information list for the MCVideo group ID;
 - ii) shall set the affiliation status of the new MCVideo group information entry to the "affiliating" state; and
 - iii) shall set the expiration time of the new MCVideo group information entry to the current time increased with the candidate expiration interval;
 - c) if in step b) above, no new MCVideo group information entries were added to the candidate list of the MCVideo group information list for the MCVideo group ID:
 - i) shall discard the candidate list; and
 - ii) shall skip the remaining steps;
- 9) determine the candidate number of MCVideo group IDs as the number of different MCVideo group IDs which have an MCVideo group information entry:
- a) in the candidate list of the MCVideo group information entries; or
 - b) in the list of the MCVideo group information entries of an MCVideo client information entry such that:
 - i) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry; and
 - ii) the MCVideo client ID of the MCVideo client information entry is not equal to the served MCVideo client ID;

with the affiliation status set to the "affiliating" state or the "affiliated" state and with the expiration time which has not expired yet; and
 - c) if the candidate number of MCVideo group IDs is bigger than the N2 value of the served MCVideo ID, shall based on MCVideo service provider policy reduce the candidate MCVideo group IDs to that equal to N2;
- NOTE 1: The MCVideo service provider policy can determine to remove an MCVideo group ID based on the importance or priority of other MCVideo groups, received SIP requests containing an authorised request for originating a priority call or other policy to determine which MCVideo groups are preferred.
- 10) shall replace the list of the MCVideo group information entries stored in the served MCVideo client information entry with the candidate list of the MCVideo group information entries; and
- 11) for each MCVideo group ID contained in an <entry> element of the <ImplicitAffiliations> element in the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with an affiliation status of "affiliating", shall perform the procedures specified in clause 8.2.2.2.6 for the served MCVideo ID and each MCVideo group ID.

NOTE 2: To learn of the MCVideo groups successfully affiliated to, the MCVideo client can subscribe to that information by the procedures specified in clause 8.2.1.3."

5.3.3 Test description

5.3.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The IUT (MCVideo Server) is connected to the SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) as defined in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Figure 4.2.4, where term "MCPTT" is replaced with "MCVideo".
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in subclause 5.1.

5.3.3.2 Test procedure sequence

Table 5.3.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation Status Determination and Subscription' as described in Annex A, Table A.3.5.3-1 to subscribe the SS-UE1 (MCVideo Client) to own affiliation status changes for user A? (See note)	-	-	1	P
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to de-affiliate user A from group A using the SS-UE1 (MCVideo Client)?	-	-	2	P
3	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to affiliate user A to group A using the SS-UE1 (MCVideo Client)?	-	-	3	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation Status Determination and Subscription' as described in Annex A, Table A.3.5.3-1 to subscribe the SS-UE2 (MCVideo Client) to own affiliation status changes for user B? (See note)	-	-	1	P
5	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to de-affiliate user B from group A using the SS-UE2 (MCVideo Client)?	-	-	4	P
6	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation Status Determination and Subscription' as described in Annex A, Table A.3.5.3-1 to subscribe the SS-UE1 (MCVideo Client) to affiliation status changes of targeted user B?	-	-	5	P
7	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to request from the SS-UE1 (MCVideo Client) to affiliate targeted user B to group A (mandatory mode)?	-	-	6	P
8	Check: Does the IUT (MCVideo Server) correctly perform steps 3-6 of procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to inform user B in the SS-UE2 (MCVideo Client) that is being remotely affiliated to group A?	-	-	6	P
9	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to request from the SS-UE1 (MCVideo Client) to de-affiliate targeted user B from group A (mandatory mode)?	-	-	7	P
10	Check: Does the IUT (MCVideo Server) correctly perform steps 3-6 of procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to inform user B in the SS-UE2 (MCVideo Client) that is being remotely de-affiliated from group A?	-	-	7	P
11	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to request from the SS-UE1 (MCVideo Client) to affiliate targeted user B to group A via negotiated mode?	-	-	8	P
12	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to inform user B in the SS-UE2 (MCVideo Client) about a remote request to affiliate to group A via negotiated mode?	-	-	9	P
13	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to affiliate user B to group A using the SS-UE2 (MCVideo Client)?	-	-	10	P
14	Check: Does the IUT (MCVideo Server) correctly perform steps 3-6 of procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to inform user A in the SS-UE1 (MCVideo Client), that user B is being affiliated to group A?	-	-	10	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
15	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to request from the SS-UE1 (MCVideo Client) to de-affiliate targeted user B to group A via negotiated mode?	-	-	11	P
16	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to inform user B in the SS-UE2 (MCVideo Client) about a remote request to de-affiliate to group A via negotiated mode	-	-	11	P
17	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to de-affiliate user B to group A using the SS-UE2 (MCVideo Client)?	-	-	4	P
18	Check: Does the IUT (MCVideo Server) correctly perform steps 3-6 of procedure 'MCVideo Group Affiliation status change' as described in Annex A, Table A.3.6.3-1 to inform user A in the SS-UE1 (MCVideo Client), that user B is being de-affiliated from group A?	-	-	4	P
19	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Group Affiliation Status Determination and Subscription' as described in Annex A, Table A.3.5.3-1 to de-subscribe the SS-UE1 (MCVideo Client) from affiliation status changes for targeted user B?	-	-	13	P
NOTE: Affiliation status change triggered by implicit affiliation.					

5.3.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

**Table 5.3.3.3-1: SIP SUBSCRIBE from the SS-UE1
(Step 1, Table 5.3.3.2-1; Step 1, Annex A, Table A.3.5.3-1)**

Derivation Path: Annex A, Table A.3.5.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Annex A, Table A.2.7.4-3			
MIME body part		SIMPLE-FILTER		
MIME-part-body	Simple-Filter as described in Table 5.3.3.3-2			

Table 5.3.3.3-2: Simple-Filter in SIP SUBSCRIBE (Table 5.3.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.6-1, condition MCVIDEO and PER-CLIENT

Table 5.3.3.3-3: SIP SUBSCRIBE from the SS-UE2
(Step 4, Table 5.3.3.2-1; Step 1, Annex A, Table A.3.5.3-1)

Derivation Path: Annex A, Table A.3.5.4-1				
Information Element	Value/remark	Comment	Reference	Condition
From			IETF RFC 3261 [10]	
addr-spec				
user-info and host	Default public user id (px_MCX_SIP_PublicUserId_B)			
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-4			
MIME body part		SIMPLE-FILTER		
MIME-part-body	Simple-Filter as described in Table 5.3.3.3-2			

Table 5.3.3.3-4: MCVideo-Info in SIP SUBSCRIBE (Table 5.3.3.3-3)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo- request-uri> with mcvideoURI set to px_MCVideo_ID_User_B			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table 5.3.3.3-5: SIP SUBSCRIBE from the SS-UE1 (Step 6, Table 5.3.3.2-1;
Step 1, Annex A, Table A.3.5.3-1)

Derivation Path: Annex A, Table A.3.5.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-4			

Table 5.3.3.3-6: SIP SUBSCRIBE from the SS-UE1
(Step 19, Table 5.3.3.2-1; Step 1, Annex A, Table A.3.5.3-1)

Derivation Path: Annex A, Table A.3.5.4-1, condition re-SUBSCRIBE				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
delta-seconds	"0"			
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-4			

Table 5.3.3.3-7: SIP PUBLISH from the SS-UE1
(Step 2, Table 5.3.3.2-1; Step 1, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.6.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
delta-seconds	"0"			

Table 5.3.3.3-8: SIP PUBLISH from the SS-UE1
(Step 3, Table 5.3.3.2-1; Step 1, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.6.4-1

Table 5.3.3.3-9: SIP PUBLISH from the SS-UE2
(Steps 5 and 17, Table 5.3.3.2-1; Step 1, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.6.4-1				
Information Element	Value/remark	Comment	Reference	Condition
From			IETF RFC 3261 [10]	
addr-spec				
user-info and host	Default public user id (px_MCX_SIP_PublicUserId_B)			
Expires				
delta-seconds	"0"			
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-10			
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-11			

Table 5.3.3.3-10: MCVideo-Info in SIP PUBLISH (Table 5.3.3.3-9)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo- request-uri> with mcvideoURI set to px_MCVideo_ID_User_B			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table 5.3.3.3-11: PIDF in SIP PUBLISH (Table 5.3.3.3-9)

Derivation Path: Annex A, Table A.3.6.4-2				
Information Element	Value/remark	Comment	Reference	Condition
presence				
entity attribute	Encrypted URI (note) with value set to px_MCVideo_ID_User_B			
tuple				
Id attribute	Encrypted URI (note) with value set to px_MCX_Client_B_ID			
status	not present			
..p-id	any allowed value	p-id shall be present acc. to ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.1.2		
NOTE: Encrypted attribute as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.13.3-1.				

Table 5.3.3.3-12: SIP PUBLISH from the SS-UE1
(Step 7, Table 5.3.3.2-1; Step 1, Annex A, Table A.3.5.3-1)

Derivation Path: Annex A, Table A.3.6.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-13			
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-14			

Table 5.3.3.3-13: MCVideo-Info in SIP PUBLISH (Table 5.3.3.3-12)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_B			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table 5.3.3.3-14: PIDF in SIP PUBLISH (Table 5.3.3.3-12)

Derivation Path: Annex A, Table A.3.6.4-2				
Information Element	Value/remark	Comment	Reference	Condition
presence				
entity attribute	Encrypted URI (note) with value set to px_MCVideo_ID_User_B			
tuple				
Id attribute	Encrypted URI (note) with value set to px_MCX_Client_B_ID			
status	not present			
..p-id	any allowed value	p-id shall be present acc. to ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.1.2		
NOTE: Encrypted attribute as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.13.3-1.				

Table 5.3.3.3-15: SIP PUBLISH from the SS-UE1
(Step 9, Table 5.3.3.2-1; Step 1, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.6.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
delta-seconds	"0"			
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-13			
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-14			

Table 5.3.3.3-16: SIP PUBLISH from the SS-UE2
(Step 13, Table 5.3.3.2-1; Step 1, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.6.4-1				
Information Element	Value/remark	Comment	Reference	Condition
From				
addr-spec				
user-info and host	Default public user id (px MCX SIP PublicUserId B)			
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-10			
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-11			

Table 5.3.3.3-17: SIP NOTIFY from the IUT (MCVideo Server)
(Step 1, Table 5.3.3.2-1; Step 3, Annex A, Table A.3.5.3-1)

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-18			

Table 5.3.3.3-18: PIDF in SIP NOTIFY (Table 5.3.3.3-17)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
tuple				
status				
affiliation				
status	"affiliated"			

Table 5.3.3.3-19: SIP NOTIFY from the IUT (MCVideo Server) (Step 3, Table 5.3.3.2-1; Step 5, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-20			

Table 5.3.3.3-20: PIDF in SIP NOTIFY (Table 5.3.3.3-19)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
tuple				
status				
affiliation				
status	"affiliated"			
..p-id	same value as received in corresponding SIP PUBLISH (Step 3)			

Table 5.3.3.3-21: SIP NOTIFY from the IUT (MCVideo Server)
(Step 3, Table 5.3.3.2-1; Step 3, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-22			

Table 5.3.3.3-22: PIDF in SIP NOTIFY (Table 5.3.3.3-21)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
tuple				
status				
affiliation				
status	"affiliating"			
..p-id	same value as received in corresponding SIP PUBLISH (Step 3)			

Table 5.3.3.3-23: SIP NOTIFY from the IUT (MCVideo Server)
(Step 2, Table 5.3.3.2-1; Step 3, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-24			

Table 5.3.3.3-24: PIDF in SIP NOTIFY (Table 5.3.3.3-23)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
tuple				
status				
affiliation				
status	"deaffiliating"			
..p-id	same value as received in corresponding SIP PUBLISH (Step 2)			

Table 5.3.3.3-25: SIP NOTIFY from the IUT (MCVideo Server)
(Step 2, Table 5.3.3.2-1; Step 5, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-26			

Table 5.3.3.3-26: PIDF in SIP NOTIFY (Table 5.3.3.3-25)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
tuple				
status				
affiliation				
status	not present			

**Table 5.3.3.3-27: SIP NOTIFY from the IUT (MCVideo Server)
(Step 4, Table 5.3.3.2-1; Step 3, Annex A, Table A.3.5.3-1)**

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-28			

Table 5.3.3.3-28: PIDF in SIP NOTIFY (Table 5.3.3.3-27)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
entity attribute	Encrypted URI (note) with value set to px_MCVideo_ID_User_B			
tuple				
Id attribute	Encrypted URI (note) with value set to px_MCX_Client_B_ID			
status				
affiliation				
status	"affiliated"			
NOTE: Encrypted attribute as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.13.3-1.				

**Table 5.3.3.3-29: SIP NOTIFY from the IUT (MCVideo Server)
(Steps 7, 8, 13 and 14, Table 5.3.3.2-1; Step 5, Annex A, Table A.3.6.3-1)**

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-30			

Table 5.3.3.3-30: PIDF in SIP NOTIFY (Table 5.3.3.3-29)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
entity attribute	Encrypted URI (note) with value set to px_MCVideo_ID_User_B			
tuple				
Id attribute	Encrypted URI (note) with value set to px_MCX_Client_B_ID			
status				
affiliation				
status	"affiliated"			
..p-id	same value as received in corresponding SIP PUBLISH			
NOTE: Encrypted attribute as described in Table 5.5.13.3-1.				

Table 5.3.3.3-31: SIP NOTIFY from the IUT (MCVideo Server)
(Steps 7, 8, 13 and 14, Table 5.3.3.2-1; Step 3, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-32			

Table 5.3.3.3-32: PIDF in SIP NOTIFY (Table 5.3.3.3-31)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
entity attribute	Encrypted URI (note) with value set to px_MCVideo_ID_User_B			
tuple				
Id attribute	Encrypted URI (note) with value set to px_MCX_Client_B_ID			
status				
affiliation				
status	"affiliating"			
..p-id	same value as received in corresponding SIP PUBLISH			
NOTE: Encrypted attribute as described in Table 5.5.13.3-1.				

Table 5.3.3.3-33: SIP NOTIFY from the IUT (MCVideo Server)
(Steps 5, 9, 10, 17 and 18, Table 5.3.3.2-1; Step 3, Annex A, Table A.3.6.3-1)

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-34			

Table 5.3.3.3-34: PIDF in SIP NOTIFY (Table 5.3.3.3-33)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
entity attribute	Encrypted URI (note) with value set to px_MCVideo_ID_User_B			
tuple				
Id attribute	Encrypted URI (note) with value set to px_MCX_Client_B_ID			
status				
affiliation				
status	"deaffiliating"			
..p-id	same value as received in corresponding SIP PUBLISH (Steps 5, 9 and 17)			
NOTE: Encrypted attribute as described in Table 5.5.13.3-1.				

Table 5.3.3.3-35: SIP NOTIFY from the IUT (MCVideo Server)
 (Steps 5, 6, 9, 10, 17 and 18, Table 5.3.3.2-1;
 Step 5, Annex A, Table A.3.6.3-1; Step 3, Annex A, Table A.3.5.3-1)

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-35A			

Table 5.3.3.3-35A: PIDF in SIP NOTIFY (Table 5.3.3.3-35)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
entity attribute	Encrypted URI (note) with value set to px_MCVideo_ID_User_B			
tuple				
Id attribute	Encrypted URI (note) with value set to px_MCX_Client_B_ID			
status	not present			
NOTE: Encrypted attribute as described in Table 5.5.13.3-1.				

Table 5.3.3.3-36: SIP NOTIFY from the IUT (MCVideo Server)
 (Step 19, Table 5.3.3.2-1; Step 3, Annex A, Table A.3.5.3-1)

Derivation Path: Annex A, Table A.3.5.4-2				
Information Element	Value/remark	Comment	Reference	Condition
Subscription-State			IETF RFC 6665 [14]	
substate-value	"terminated"			
expires	not present			
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.3.3.3-35A			

Table 5.3.3.3-37: SIP MESSAGE from the SS-UE1
(Step 11, Table 5.3.3.2-1; Step 1, Annex A, Table A.2.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, conditions MCVIDEO and AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-38			

Table 5.3.3.3-38: MCVideo-Info in SIP MESSAGE (Table 5.3.3.3-37)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_B			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table 5.3.3.3-39: SIP MESSAGE from the IUT (MCVideo Server)
(Step 12, Table 5.3.3.2-1; Step 1, Annex A, Table A.2.9.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, conditions MCVIDEO and AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-40			

Table 5.3.3.3-40: MCVideo-Info in SIP MESSAGE (Table 5.3.3.3-39)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_B			
mcvideo-calling-user-id	not present			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

Table 5.3.3.3-41: SIP MESSAGE from the SS-UE1
(Step 15, Table 5.3.3.2-1; Step 1, Annex A, Table A.2.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, conditions MCVIDEO and AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		Affiliation-Command		
MIME-part-body	Affiliation-Command as described in Table 5.3.3.3-43			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-42			

Table 5.3.3.3-42: MCVideo-Info in SIP MESSAGE (Table 5.3.3.3-41)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_B			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table 5.3.3.3-43: Affiliation-Command in SIP MESSAGE (Table 5.3.3.3-41)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.7-2				
Information Element	Value/remark	Comment	Reference	Condition
command-list				
affiliate	not present			
de-affiliate				
group[1]	px_MCVideo_Group_A_ID	MCVideo group name		

**Table 5.3.3.3-44: SIP MESSAGE from the IUT (MCVideo Server)
(Step 16, Table 5.3.3.2-1; Step 1, Annex A, Table A.2.9.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, conditions MCVIDEO and AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		Affiliation-Command		
MIME-part-body	Affiliation-Command as described in Table 5.3.3.3-46			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.3.3.3-45			

Table 5.3.3.3-45: MCVideo-Info in SIP MESSAGE (Table 5.3.3.3-44)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_B			
mcvideo-calling-user-id	not present			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

Table 5.3.3.3-46: Affiliation-Command in SIP MESSAGE (Table 5.3.3.3-44)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.7-2				
Information Element	Value/remark	Comment	Reference	Condition
command-list				
affiliate	not present			
de-affiliate				
group[1]	px_MCVideo_Group_A_ID	MCVideo group name		

5.4 MCVIDEO Server - MCVIDEO Client / Configuration / Determination of MCVIDEO Service Settings / Current Active MCVIDEO Settings / De-subscribe

5.4.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo client ) requests to determine the currently active MCVideo service
settings with SIP SUBSCRIBE message }
    then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends a SIP NOTIFY message
}
}
```

(2)

```
with { IUT (MCVideo Server) having determined MCVideo service settings}
ensure that {
  when { the SS-UE1 (MCVideo client ) requests to re-subscribe to MCVideo service settings with SIP
SUBSCRIBE message }
    then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends a SIP NOTIFY message
}
}
```

(3)

```
with { IUT (MCVideo Server) having determined MCVideo service settings }
ensure that {
  when { the SS-UE1 (MCVideo client ) requests to de-subscribe from MCVideo service settings with
SIP SUBSCRIBE message }
    then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends a SIP NOTIFY message
}
}
```

5.4.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 7.1, 7.2.4, 7.3.3, 7.3.4, 7.3.5, 7.3.1A, 7.3.6.1 and 7.3.6.2. Unless otherwise stated these are Rel-14 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.1]

"This clause describes the procedures for SIP registration and MCVideo service authorization for the MCVideo client and the MCVideo service. The MCVideo UE can use SIP REGISTER or SIP PUBLISH for MCVideo service settings to perform service authorization for MCVideo. The decision which method to use is based on implementation and on availability of an access-token received as outcome of the user authentication procedure as described in 3GPP TS 24.482 [52].

If another MC service client (e.g. MCPTT, MCDATA) is operating at the same time on the same MC UE as the MCVideo client, then the MCVideo client shares the same SIP registration as the other MC service clients. The SIP REGISTER procedures in this clause are combined with the SIP REGISTER procedures for the other operating MC service clients to create a single SIP REGISTER request. If other MC service clients are already operating when the MCVideo client registers, then a re-registration is performed containing the parameters for the other operating MC services.

Although the access-token can be the same for the MCVideo service as for other MC services when performing service authorization for MCVideo along with other MC services using SIP REGISTER multipart MIME bodies for each MC service are included in the SIP REGISTER request. The MCVideo server can therefore receive multipart MIME bodies in the SIP REGISTER request. Multiple contact addresses (one per MC service client) can be included in a SIP REGISTER request provided they all contain the same IP address and port number (see 3GPP TS 24.229 [4] for further details of including multiple contact addresses in a single SIP REGISTER request).

If the MCVideo client logs off from the MCVideo service but other MC service clients are to remain registered the MC UE performs a re-registration as specified in 3GPP TS 24.229 [4] without 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 but with the parameters for the remaining operating MC service clients."

[ETSI TS 124 281 [8] (3GPP 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 MPCTT 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."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.3]

"The MCVideo server shall support obtaining service authorization specific information from a SIP PUBLISH request for MCVideo server settings.

Upon receiving a SIP PUBLISH request containing:

- 1) *an Event header field set to the "poc-settings" value;*
- 2) *an application/poc-settings+xml MIME body; and*
- 3) *an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <mcvideo-access-token> element and an <mcvideo-client-id> element;*

the MCVideo server:

- 1) *shall identify the IMS public user identity from the P-Asserted-Identity header field;*
- 2) *shall perform the procedures in clause 7.3.1A;*
- ...
- 3a) *shall check if the number of maximum simultaneous authorizations supported for the MCVideo user as specified in the <max-simultaneous-authorizations> element of the <anyExt> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]) has been reached ...*
- 4) *shall perform service authorization for the identified MCVideo ID as described in 3GPP TS 33.180 [8];*
- 5) *if service authorization was successful:*
 - a) *shall bind the MCVideo ID and MCVideo client ID to the IMS public user identity;*
 - b) *if the service authorization request was from an MCVideo user who is previously MCVideo service authorized on another MCVideo client (as determined by a comparison of the received MCVideo client ID with the MCVideo client ID of existing bindings), keep the current bindings and create a new binding between the MCVideo ID, MCVideo client ID and the IMS public user identity; and*
 - c) *if a Resource-Share header field with the value "supported" was included in the "message/sip" MIME body of the third-party REGISTER request, shall bind the MCVideo ID to the identity of the MCVideo UE contained in the "+g.3gpp.registration-token" header field parameter in the Contact header field of the third-party REGISTER request that contained this IMS public user identity;*

NOTE 1: *The MCVideo server will store the binding MCVideo ID, MCVideo client ID, IMS public user identity and an identifier addressing the MCVideo server in an external database.*

...

- 7) *shall process the SIP PUBLISH request according to rules and procedures of IETF RFC 3903 [12] and if processing of the SIP request was not successful, do not continue with the rest of the steps;*
- 8) *shall cache the received MCVideo service settings until the MCVideo service settings expiration timer expires;*
- 9) *shall send aSIP 200 (OK) response according to 3GPP TS 24.229 [11] with:*
 - a) *if more than one binding exists for the MCVideo ID, an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <multiple-devices-ind> element set to the value "true";*
- 10) *shall use the Answer-Mode Indication setting in the <am-settings> element of the poc-settings event package as the current Answer-Mode Indication of the MCVideo client.*
- 11) *shall download the MCVideo user profile from the MCVideo user database as defined in 3GPP TS 29.283 [54] if not already stored at the MCVideo server and use the <selected-user-profile-index> element of the poc-settings event package if included to identify the active MCVideo user profile for the MCVideo client;*

NOTE 2: *If the <selected-user-profile-index> element of the poc-settings event package is included then only that MCVideo user profile is needed to be downloaded from the MCVideo user database.*

- 12) if there is no `<selected-user-profile-index>` element included in the poc-settings event package then if multiple MCVideo user profiles are stored at the MCVideo server or downloaded for the MCVideo user from the MCVideo user database, shall determine the pre-selected MCVideo user profile to be used as the active MCVideo user profile by identifying the MCVideo user profile (see the MCVideo user profile document in 3GPP TS 24.484 [25]) in the collection of MCVideo user profiles that contains a `<Pre-selected-indication>` element; and

NOTE 3: If only one MCVideo user profile is stored at the MCVideo server or only one MCVideo user profile is downloaded from the MCVideo user database, then by default this MCVideo user profile is the pre-selected MCVideo user profile.

- 13) if an `<ImplicitAffiliations>` element is contained in the `<OnNetwork>` element of the MCVideo user profile document with one or more `<entry>` elements containing an MCVideo group ID (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID, shall perform implicit affiliation as specified in clause 8.2.2.2.15."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.4]

"Upon receiving a SIP PUBLISH request containing:

- 1) an Event header field set to the "poc-settings" value;
- 2) an application/poc-settings+xml MIME body; and
- 3) an application/vnd.3gpp.mcvideo-info+xml MIME body containing an `<mcvideo-request-uri>` element and an `<mcvideo-client-id>` element;

The MCVideo server:

- 1) shall identify the IMS public user identity from the P-Asserted-Identity header field;
- 2) shall perform the procedures in clause 7.3.1A;
- ...
- 4) shall verify that a binding between the IMS public user identity in the Request-URI and the MCVideo ID in the `<mcvideo-request-uri>` element of the application/vnd.3gpp.mcvideo-info+xml exists at the MCVideo server;
- 5) if a binding exists between the IMS public user identity and the MCVideo ID in the request and the validity period of the binding has not expired shall download the MCVideo user profile from the MCVideo user database as defined in 3GPP TS 29.283 [54] if not already stored at the MCVideo server;
- ...
- 7) shall process the SIP PUBLISH request according to rules and procedures of IETF RFC 3903 [12] and if processing of the SIP request was not successful, do not continue with the rest of the steps;
- 8) shall cache the received MCVideo service settings until the MCVideo service settings expiration timer expires;
- 9) shall send a SIP 200 (OK) response according 3GPP TS 24.229 [11];
- 10) shall use the Answer-Mode Indication setting in the `<am-settings>` element of the poc-settings event package as the current Answer-Mode Indication of the MCVideo client.
- 11) shall download the MCVideo user profile from the MCVideo user database as defined in 3GPP TS 29.283 [54] if not already stored at the MCVideo server and use the `<selected-user-profile-index>` element of the poc-settings event package if included to identify the active MCVideo user profile for the MCVideo client;

NOTE 1: If the `<selected-user-profile-index>` element of the poc-settings event package is included then only that MCVideo user profile is needed to be downloaded from the MCVideo user database.

- 12) if there is no *<selected-user-profile-index>* element included in the poc-settings event package then if multiple MCVideo user profiles are stored at the MCVideo server or downloaded for the MCVideo user from the MCVideo user database, shall determine the pre-selected MCVideo user profile to be used as the active MCVideo user profile by identifying the MCVideo user profile (see the MCVideo user profile document in 3GPP TS 24.484 [25]) in the collection of MCVideo user profiles that contains a *<Pre-selected-indication>* element; and

NOTE 2: If only one MCVideo user profile is stored at the MCVideo server or only one MCVideo user profile is downloaded from the MCVideo user database, then by default this MCVideo user profile is the pre-selected MCVideo user profile.

- 13) if an *<ImplicitAffiliations>* element is contained in the *<OnNetwork>* element of the MCVideo user profile document with one or more *<entry>* elements containing an MCVideo group ID (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID, shall perform implicit affiliation as specified in clause 8.2.2.2.15."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.5]

"Upon receiving a SIP PUBLISH request containing:

- 1) an Event header field set to the "poc-settings" value; and
- 2) an Expires header field set to 0;

the MCVideo server:

- 1) shall identify the IMS public user identity from the P-Asserted-Identity header field;
- 2) shall process the SIP PUBLISH request according to rules and procedures of IETF RFC 3903 [12] and if processing of the SIP request was successful, continue with the rest of the steps;
- 3) shall remove the MCVideo service settings;
- 4) shall remove the binding between the MCVideo ID and public user identity; and
- 5) shall send a SIP 200 (OK) response according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.1A]

"When the MCVideo server receives a SIP REGISTER request sent from the MCVideo client contained within a message/sip MIME body of a received third-party SIP REGISTER request or a SIP PUBLISH request, it first determines whether XML MIME bodies included in the request are integrity protected. If XML MIME bodies are integrity protected the MCVideo server validates the signature of each of the XML MIME bodies. If the integrity protection check(s) pass or the XML MIME bodies are not integrity protected, the MCVideo server then determines whether the content in specific XML elements is confidentiality protected. If XML content is confidentiality protected, the MCVideo server decrypts the protected content.

Upon receiving:

- a SIP REGISTER request containing an application/vnd.3gpp.mcvideo-info+xml MIME body within a message/sip MIME body of the SIP REGISTER request sent from the MCVideo client; or
- a SIP PUBLISH request containing an application/vnd.3gpp.mcvideo-info+xml MIME body and an application/poc-settings+xml MIME body;

the MCVideo server:

- 1) shall determine if integrity protection has been applied to XML MIME bodies in the SIP request by following the procedures in clause 6.6.3.4.1 for each XML MIME body;
- 2) if integrity protection has been applied, shall use the keying data described in clause 6.6.3.2 and the procedures described in clause 6.6.3.4.2 to verify the integrity of each of the XML MIME bodies; and
- 3) if all integrity protection checks succeed, shall continue with the remaining steps of this clause.

Upon receiving:

- a SIP REGISTER request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-access-token> element and an <mcvideo-client-id> element within a message/sip MIME body of the SIP REGISTER request sent from the MCVideo client; or
- a SIP PUBLISH request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-access-token> element and an <mcvideo-client-id> element, and an application/poc-settings+xml MIME body;

the MCVideo server:

- 1) shall determine if confidentiality protection has been applied to the <mcvideo-access-token> element and the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, by following the procedures in clause 6.6.2.4.1;
- 2) if confidentiality protection has been applied to the <mcvideo-access-token> element and <mcvideo-client-id> element:
 - a) shall use the keying information received in the MIKEY-SAKKE I_MESSAGE as specified in 3GPP TS 33.180 [8], along with the procedures described in clause 6.6.2.4.2 to:
 - i) decrypt the received access token in the <mcvideo-access-token> element in the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) decrypt the received MCVideo client ID in the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - b) if the decryption procedure succeeds, shall identify the MCVideo ID and the MCVideo client ID from the decrypted values; and
 - c) if the decryption procedure fails, shall determine that confidentiality protection has not been successful;
- 3) if confidentiality protection has been applied to only one of the <mcvideo-access-token> element or the <mcvideo-client-id> element:
 - a) shall determine that confidentiality protection has not been successful;
- 4) if confidentiality protection has not been applied:
 - a) shall identify the MCVideo ID from <mcvideo-access-token> element received in the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - b) shall identify the MCVideo client ID from the <mcvideo-client-id> element received in the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receiving a SIP PUBLISH request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-request-uri> element, an <mcvideo-client-id> element, and an application/poc-settings+xml MIME body, the MCVideo server:

- 1) shall determine if confidentiality protection has been applied to the <mcvideo-request-uri> element and the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body by following the procedures in clause 6.6.2.4.1;
- 2) if confidentiality protection has been applied to the <mcvideo-request-uri> element and the <mcvideo-client-id> element:
 - a) shall use the keying information described in clause 6.6.2.2 along with the procedures described in clause 6.6.2.4.2 to:
 - i) decrypt the received encrypted MCVideo ID in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body; and

- ii) decrypt the received encrypted MCVideo client ID in the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body;
- b) if all decryption procedures succeed, shall identify the MCVideo ID and MCVideo client ID from the decrypted values; and
- c) if the decryption procedure fails, shall determine that confidentiality protection has not been successful;
- 3) if confidentiality protection has been applied to only one of the <mcvideo-request-uri> element or <mcvideo-client-id> element:
 - a) shall determine that confidentiality protection has not been successful;
- 4) if confidentiality protection has not been applied:
 - a) shall identify the MCVideo ID from the contents of the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - b) shall identify the MCVideo client ID from the <mcvideo-client-id> element received in the application/vnd.3gpp.mcvideo-info+xml MIME body."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.6.1]

"Upon receiving a SIP SUBSCRIBE request such that:

- 1) Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the participating MCVideo function of the served MCVideo user;
- 2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> element which identifies an MCVideo ID served by the MCVideo server;
- 3) 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
- 3) the Event header field of the SIP SUBSCRIBE request contains the 'poc-settings' event type.

the MCVideo server:

- 1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;
- 2) if the Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE request;
- 3) if the originating MCVideo ID is different than the served MCVideo ID, shall send a 403 (Forbidden) response and shall not continue with the rest of the steps; and
- 4) shall generate a 200 (OK) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16] and IETF RFC 4354 [53].

For the duration of the subscription, the MCVideo server shall notify subscriber about changes of the MCVideo service settings of the subscribed MCVideo user, as described in clause 7.3.6.2."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.6.2]

"In order to notify the subscriber about changes of the MCVideo service settings of the subscribed MCVideo client of the subscribed MCVideo user, the MCVideo server:

- 1) shall generate an application/poc-settings+xml MIME body as defined in 3GPP TS 24.379 [40] containing:
 - a) the <am-settings> element of the poc-settings event package set to the current answer mode setting of the MCVideo client according to IETF RFC 4354 [53]; and
 - b) the <selected-user-profile-index> element as defined in clause 7.4.1.2 identifying the active MCVideo user profile; and

- 2) *send a SIP NOTIFY request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16] and IETF RFC 4354 [53] with the constructed application/poc-settings+xml MIME body."*

5.4.3 Test description

5.4.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The IUT (MCVideo Server) is connected to the SS-UE1 (MCVideo Client) as defined in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Figure 4.2.4, where term "MCPTT" is replaced with "MCVideo".
- The SS-UE1 (MCVideo Client) performs the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.

5.4.3.2 Test procedure sequence

Table 5.4.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Subscription and Notification' as described in Annex A, Table A.2.7.3-1 to determine the currently active MCVideo service settings of the SS-UE1 (MCVideo Client)?	-	-	1	P
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Subscription and Notification' as described in Annex A, Table A.2.7.3-1 to re-subscribe to MCVideo service settings and to receive later notifications?	-	-	2	P
3	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Subscription and Notification' as described in Annex A, Table A.2.7.3-1 to de-subscribe from MCVideo service settings?	-	-	3	P

5.4.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications:

Table 5.4.3.3-1: SIP SUBSCRIBE from the SS-UE1 (Step 1, Table 5.4.3.2-1; Step 1, Annex A, Table A.2.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.14-1, condition POC-SETTINGS-EVENT				
Information Element	Value/remark	Comment	Reference	Condition
Expires			ETSI TS 124 281 [8] (3GPP TS 24.281) clause 7.2.4	
value	"4294967295"			
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.4.3.3-2			

Table 5.4.3.3-2: MCVideo-Info in SIP SUBSCRIBE (Table 5.4.3.3-1, Table 5.4.3.3-4 and Table 5.4.3.3-5)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2, condition POC-SETTINGS-EVENT

Table 5.4.3.3-3: SIP 200 (OK) from the MCVideo Server (Steps 1, 2 and 3, Table 5.4.3.2-1; Step 2, Annex A, Table A.2.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1, conditions SUBSCRIBE-RSP

Table 5.4.3.3-4: SIP SUBSCRIBE from the SS-UE1 (Step 2, Table 5.4.3.2-1; Step 1, Annex A, Table A.2.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.14-1, condition POC-SETTINGS-EVENT, re SUBSCRIBE				
Information Element	Value/remark	Comment	Reference	Condition
Expires			ETSI TS 124 281 [8] (3GPP TS 24.281) clause 7.2.4	
value	"4294967295"			
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.4.3.3-2			

Table 5.4.3.3-5: SIP SUBSCRIBE from the SS-UE1 (Step 3, Table 5.4.3.2-1; Step 1, Annex A, Table A.2.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.14-1, condition POC-SETTINGS-EVENT, re SUBSCRIBE				
Information Element	Value/remark	Comment	Reference	Condition
Expires			ETSI TS 124 281 [8] (3GPP TS 24.281) clause 7.2.4	
value	"0"			
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 5.4.3.3-2			

**Table 5.4.3.3-6: SIP NOTIFY from the MCVideo Server
(Steps 1 and 2, Table 5.4.3.2-1; Step 3, Annex A, Table A.2.7.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.8-1, conditions POC-SETTINGS-EVENT				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PoC-Settings		
MIME-part-body	PoC-Settings as described in Table 5.4.3.3-7			

Table 5.4.3.3-7: PoC-Settings in SIP NOTIFY (Table 5.4.3.3-6)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.11.2-1

**Table 5.4.3.3-8: SIP NOTIFY from the MCVideo Server
(Step 3, Table 5.4.3.2-1; Step 3, Annex A, Table A.2.7.3-1)**

Derivation Path: Table 5.4.3.3-6				
Information Element	Value/remark	Comment	Reference	Condition
Subscription-State			IETF RFC 6665 [14]	
substate-value	"terminated"			
expires	not present			

5.5 MCVIDEO Server - MCVIDEO Client / Configuration / Download CSK

5.5.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { IUT (MCVideo Server) requests to update the existing CSK }
  then { IUT (MCVideo Server) sends a SIP MESSAGE message to the SS-UE1 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having registered the clients }
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates an E2E group call establishment with manual
commencement mode and with implicit transmission request and without implicit granted }
  then { IUT (MCVideo Server) accepts the call from the initiator and establishes the call with
all registered users of the group and enforces transmission control }
}
```

(3)

```
with { IUT (MCVideo Server) having established an MCVideo E2E group call with Manual Commencement
Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) ends the E2E group call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the other participants }
}
```

5.5.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.7, ETSI TS 133 180 [7] (3GPP TS 33.180), clauses 9.2.1.1, 9.2.1.2, 9.2.1.4 and 5.8.1, and ETSI TS 124 581 [9] (3GPP TS 24.581), clauses 13.1, 13.2 and 13.3.2. Unless otherwise stated these are Rel-14 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 7.3.7]

"If confidentiality protection is enabled as specified in clause 6.6.2.3.1, and if the participating MCVideo function received a Client Server Key (CSK) within a SIP REGISTER request for service authorisation or SIP PUBLISH request for service authorisation, the participating MCVideo function may decide to update the CSK. In this case, the participating MCVideo function shall perform a key download procedure for the CSK. The participating MCVideo function:

- 1) *shall generate an SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];*
- 2) *shall set the Request-URI to the URI received in the To header field in a third-party SIP REGISTER request;*
- 3) *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];*
- 4) *shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";*
- 5) *shall include an application/mikey MIME body containing the CSK-ID and the CSK encrypted within a MIKEY message to the MC client as specified in clause 9.2.1 of 3GPP TS 33.180 [8] in the body of the SIP MESSAGE request;*
- 6) *shall send the SIP MESSAGE request towards the MCVideo client according to 3GPP TS 24.229 [11]."*

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 9.2.1.1]

"A Client-Server Key is required to protect unicast RTCP signalling between the MC client and the MCX Server. The use of the CSK in this context is defined in clause 9.4.

Additionally, the MC Service provider may require that MC identities, access tokens and other sensitive information transferred between clients and MC domain on the SIP-1 and SIP-2 interfaces be protected at the application layer from any viewing, including protection from viewing at the SIP signalling layer. Symmetric key based protection of SIP payload using CSK may be used to satisfy this requirement. The use of CSK in this context is defined in clause 9.3.

The uses of the CSK are shown in Figure 9.2.1-1.

..."

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 9.2.1.2]

"The 128-bit CSK is initially generated by the client and provided encrypted to the server through the SIP interface along with the CSK-ID identifying the CSK.

The key remains in use until: a new CSK is required, the SIP session is torn down, the MC user logs off, or some other indication. If during the active SIP session an update of the CSK is required, the server generates a CSK and provides it to the client using the mechanism defined in clause 5.8."

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 9.2.1.4]

"The MCX Server may decide to update an existing CSK at any time. This may be due to CSK revocation or expiry.

The CSK shall be updated by the MCX Server using the 'key download' procedure, defined in clause 5.8. Upon receipt of a CSK via a 'key download' procedure, the MC client shall identify the type of key as a CSK via the 4 most significant bits of the CSK-ID. The MC client shall:

- *discard any previous CSKs associated with the MC Server FQDN, and*
- *use the new CSK for uplink signaling with the MC Server."*

[ETSI TS 133 180 [7] (3GPP TS 33.180), clause 5.8.1]

"The 'key download' procedure is used to send keys from the MCX server to the MC client. It is used to distribute Multicast Signalling Keys (MuSiKs) to the MC clients, and it is used to update both the CSKs and MuSiKs.

Within the 'key download' procedure, keys (CSK or MuSiKs) are encrypted specifically to the MC user and signed using an identity representing the MC Server. Prior to group key distribution, each MC client shall be provisioned by the KMS with time-limited key material associated with the MC User as described clause 5.3. The MC Server shall also be provisioned by the MC KMS with key material for an identity which is authorised to act as an MCX Server.

The key (CSK or MuSiK) is distributed from the MCX Server to a MC client using the security mechanism described in clause 5.2.2, transported over the SIP bearer. End-point diversity is not required as end-points do not encrypt data, hence the extension in clause 5.2.3 is not applied. Additional parameters may be included as defined in clause 5.2.4. The SAKKE-to-self extension may be included as defined in clause 5.2.5. Identity hiding may be supported as defined in clause 5.2.6.

The initiating entity shall be the initiating MCX Server and the receiving entity shall be the terminating MC user. The initiating entity URI shall be the FQDN of the MCX Server (e.g. MDSI of the MC Domain) and the receiving entity URI shall be the MC Service ID of the terminating user. The distributed key, K, shall be the CSK or MuSiK and the key identifier K-ID shall be the CSK-ID or MuSiK-ID (respectively).

As a result of this 'key download' mechanism, the MC clients receive a new signalling key, CSK or MuSiK, identified by the 4 most significant bits of the key ID.

The MCDATA Service server may use the Key Download procedure to indicate or modify the algorithm used to protect the MCDATA signalling fields (i.e. MCDATA signaling parameters, Data signaling payload and End to end security parameters) by including a 'signalling algorithm' parameter. The 'signalling algorithm' parameter is described in clause 8.5.4.1. The available algorithms shall be as defined in clause 8.5.4.2."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 13.1]

"Media plane security provides integrity and confidentiality protection of individual media streams and media plane control messages in MCVideo sessions.

The media plane security is based on 3GPP MCVideo security solution including key management and end-to-end media and transmission control and reception control messages protection as defined in 3GPP TS 33.180 [8].

Various keys and associated key identifiers protect:

1. RTP transported media;
2. RTCP transported media control messages (i.e. RTCP SR packets, RTCP RR packets, RTCP SDES packets); and
3. RTCP APP transported transmission control and reception control messages.

In an on-network group call of an MCVideo group which is not a constituent MCVideo group of a temporary MCVideo ...

2. *if protection of transmission control and reception control messages sent using unicast between the MCVideo client and the participating MCVideo function serving the the MCVideo client is negotiated, the CSK and the CSK-ID protect the transmission control messages sent and received using unicast by the MCVideo client and by a participating MCVideo function;*
- ...
5. *if protection of media control messages sent using unicast between the MCVideo client and the participating MCVideo function serving the the MCVideo client is negotiated, the CSK and the CSK-ID protect the media control messages sent and received using unicast by the MCVideo client and by a participating MCVideo function; and*
- ...

In an on-network private call:

...

2. *if protection of transmission control and reception control messages sent using unicast between the MCVideo client and the participating MCVideo function serving the the MCVideo client is negotiated, the CSK and the CSK-ID protect the transmission control and reception control messages sent and received by the MCVideo client and by the participating MCVideo function;*

...

4. *if protection of media control messages sent using unicast between the MCVideo client and the participating MCVideo function serving the the MCVideo client is negotiated, the CSK and the CSK-ID protect the media control messages sent and received using unicast by the MCVideo client and by a participating MCVideo function; and*

...

The CSK and the CSK-ID are generated by the MCVideo client and provided to the participating MCVideo function serving the MCVideo client using SIP signalling according to 3GPP TS 24.281 [2].

..."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 13.2]

"Each key (i.e. CSK, GMK, MKFC, PCK, SPK, MSCCK) and its associated key identifier (i.e. CSK-ID, GMK-ID, MKFC-ID, PCK-ID, SPK-ID, MSCCK-ID) described in clause 13.1 are used to derive SRTP-MK, SRTP-MS and SRTP-MKI.

SRTP-MK, SRTP-MS and SRTP-MKI are used in encryption of media or transmission control and reception control messages in SRTP as specified in IETF RFC 3711 [4] and 3GPP TS 33.180 [8]."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 13.3.2]

"The participating MCVideo function:

1. *if protection of media is negotiated, shall be transparent to RTP media streams and shall forward encrypted RTP media streams without decrypting the payload;*
 2. *if protection of transmission control and reception control messages sent using unicast between the participating MCVideo function and the MCVideo client is negotiated and the CSK and the CSK-ID were received from the MCVideo client using SIP signalling according to 3GPP TS 24.281 [2]:*
 - A) *shall encrypt transmission control and reception control messages sent using unicast to the served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2; and*
 - B) *shall decrypt transmission control and reception control messages received using unicast from the served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2;*
- ...
5. *if protection of pre-established session call control messages between the participating MCVideo function and the MCVideo client is negotiated and the CSK and the CSK-ID were received from the MCVideo client using SIP signalling according to 3GPP TS 24.281 [2]:*
 - A) *shall encrypt pre-established session call control messages sent to the served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2; and*
 - B) *shall decrypt pre-established session call control messages received from served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2;*

6. *if protection of media control messages sent using unicast between the participating MCVideo function and the MCVideo client is negotiated between the participating MCVideo function and the MCVideo client and the CSK and the CSK-ID were received from the MCVideo client using SIP signalling according to 3GPP TS 24.281 [2];*
- A) *shall encrypt media control messages sent using unicast to the served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2; and*
- B) *shall decrypt media control messages received using unicast from the served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2;*
- ..."

5.5.3 Test description

5.5.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The IUT (MCVideo Server) is connected to the SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) as defined in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Figure 4.2.4, where term "MCPTT" is replaced with "MCVideo".
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.

5.5.3.2 Test procedure sequence

Table 5.5.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to update the existing CSK between the MCVideo Server and SS-UE1 (MCVideo Client)?	-	-	1	P
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E group call establishment, manual commencement' as described in Annex A, Table A.3.2.3-1 to establish a group call with manual commencement mode, and with implicit transmission request but without implicit granted; and using the updated CSK to unprotect the SIP INVITE message received from SS-UE1 (MCVideo Client), with Option b.ii of note on Table A.3.2.3-1?	-	-	2	P
3	Check: Does the IUT (MCVideo server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1, to release the call?	-	-	3	P

5.5.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications:

**Table 5.5.3.3-1: SIP MESSAGE from the IUT (MCVideo Server)
(Step 1, Table 5.5.3.2-1; Step 1, Annex A, Table A.2.9.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Service			ETSI TS 124 281 [8] (3GPP TS 24.281) clause 7.3.7	
Service-ID	"urn:urn-7:3gpp-service.ims.icsi.mcvideo"			
Content-Type				
media-type	"application/mikey"			
Message-body				
MIKEY message	base64 encoded MIKEY message as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.9.1-1A	MIKEY message, containing the updated CSK		

5.6 MCVIDEO Server - MCVIDEO Client / Configuration / Subscription to group dynamic data / De-subscribe

5.6.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) having registered the clients }
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates an E2E group call with manual commencement mode and
with implicit transmission request and without implicit granted }
  then { IUT (MCVideo Server) accepts the call from the initiator and establishes the call with
all registered users of the group }
}
```

(2)

```
with { IUT (MCVideo Server) having established an E2E group call with manual commencement mode }
ensure that {
  when { the SS-UE1 (MCVideo client ) requests to subscribe to group dynamic data for group call
ongoing information with SIP SUBSCRIBE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends a SIP NOTIFY message
}
}
```

(3)

```
with { IUT (MCVideo Server) having determined MCVideo subscription to group dynamic data }
ensure that {
  when { the SS-UE1 (MCVideo client ) requests to de-subscribe from MCVideo group dynamic data for
group call ongoing information with SIP SUBSCRIBE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends a SIP NOTIFY message
}
}
```

(4)

```
with { IUT (MCVideo Server) having established an MCVideo E2E group call with Manual Commencement
Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) ends the E2E group call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the other participants }
}
```

5.6.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 8.2.2.2.16, 8.2.2.3.9 and 8.2.2.3.10. Unless otherwise stated these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 8.2.2.2.16]

"Upon receiving a SIP SUBSCRIBE request such that:

- 1) Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user;
- 2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info MIME body containing the<mcvideo-request-uri> element which identifies an MCVideo group ID not served by the MCVideo server;
- 3) 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 [9]; and
- 4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type;

then the MCVideo server:

- 1) shall identify the target MCVideo group ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info MIME body of the SIP SUBSCRIBE request;

- 2) shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE request;
- 3) shall if the originating MCVideo ID is not authorized for this subscription reject the SIP SUBSCRIBE request with SIP 403 (Forbidden) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3903 [37] and IETF RFC 3856 [51] and skip the rest of the steps;
- 4) shall generate a SIP SUBSCRIBE request from the received SIP SUBSCRIBE request. In the generated SIP SUBSCRIBE request, the MCVideo server:
 - a) shall set the Request-URI to the public service identity identifying the controlling MCVideo function serving the target MCVideo group ID;
 - b) shall include a P-Asserted-Identity header field containing the public service identity identifying the originating participating MCVideo function serving the MCVideo user;
 - c) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo server:
 - A) shall include the <mcvideo-request-uri> element set to the target MCVideo group ID; and
 - B) shall include the <mcvideo-calling-user-id> element set to the originating MCVideo ID; and
 - d) shall include other signalling elements from the received SIP SUBSCRIBE request; and
- 4) shall send the generated SIP SUBSCRIBE request according to 3GPP TS 24.229 [11].

The MCVideo server shall forward any received SIP responses to the SIP SUBSCRIBE request, any received SIP NOTIFY requests and any received SIP responses to the SIP NOTIFY request."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 8.2.2.3.9]

"Upon receiving a SIP SUBSCRIBE request such that:

- 1) Request-URI of the SIP SUBSCRIBE request contains the public service identity of the controlling MCVideo function associated with the served MCVideo group;
- 2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> element and the <mcvideo-calling-user-id> element;
- 3) 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 [9];
- 4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type; and
- 5) the SIP SUBSCRIBE request contains an application/simple-filter+xml MIME body indicating per-group dynamic data of presence event package notification information according to clause 8.3.2 indicating the same MCVideo group ID as in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

then the MCVideo server:

- 1) shall identify the served MCVideo group ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;
- 2) shall identify the handled MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;
- 3) if the Expires header field of the SIP SUBSCRIBE request is not included or has nonzero value lower than 4294967295, shall send a SIP 423 (Interval Too Brief) response to the SIP SUBSCRIBE request, where the SIP 423 (Interval Too Brief) response contains a Min-Expires header field set to 4294967295, and shall not continue with the rest of the steps;

- 4) if an MCVideo group for the served MCVideo group ID does not exist in the group management server according to 3GPP TS 24.481 [31], shall reject the SIP SUBSCRIBE request with SIP 403 (Forbidden) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3903 [37] and IETF RFC 3856 [51] and skip the rest of the steps;
- 5) if the handled MCVideo ID is not authorized to subscribe to group dynamic data of the MCVideo group identified by the served MCVideo group ID, shall reject the SIP SUBSCRIBE request with SIP 403 (Forbidden) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3903 [37] and IETF RFC 3856 [51] and skip the rest of the steps; and
- 6) shall generate a SIP 200 (OK) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [26].

For the duration of the subscription, the MCVideo server shall notify subscriber about changes of the information of the served MCVideo ID, as described in clause 8.2.2.3.10."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 8.2.2.3.10]

"In order to notify the subscriber identified by the handled MCVideo ID about changes of the per-group dynamic data of the served MCVideo group ID, the MCVideo server:

- 1) shall consider an MCVideo group information entry such that:
 - a) the MCVideo group information entry is in the list of MCVideo group information entries described in clause 8.2.2.3.2; and
 - b) the MCVideo group ID of the MCVideo group information entry is equal to the served MCVideo group ID;
- 2) shall generate an application/pidf+xml MIME body indicating per-group dynamic data according to clause 8.3.1 with the following clarifications:
 - a) the MCVideo server shall include the "expires" attribute in the <affiliation> element; and
- 3) shall send a SIP NOTIFY request according to 3GPP TS 24.229 [11], and IETF RFC 6665 [26] for the subscription created in clause 8.2.2.3.9. In the SIP NOTIFY request, the MCVideo server shall include the generated application/pidf+xml MIME body indicating per-group dynamic data."

5.6.3 Test description

5.6.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The IUT (MCVideo Server) is connected to the SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) as defined in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Figure 4.2.4.
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1

5.6.3.2 Test procedure sequence

Table 5.6.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E group call establishment, manual commencement' as described in Annex A, Table A.3.2.3-1 to establish a group call with manual commencement mode, and with implicit transmission request but without implicit granted; as described in Option b.ii of note on Table A.3.2.3-1?	-	-	1	P
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Subscription and Notification' as described in Annex A, Table A.2.7.3-1 to subscribe to group dynamic data for group call ongoing information?	-	-	2	P
3	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Subscription and Notification' as described in Annex A, Table A.2.7.3-1 to de-subscribe to group dynamic data for group call ongoing information?	-	-	3	P
4	Check: Does the IUT (MCVideo server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1, to release the call?	-	-	4	P

5.6.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications:

**Table 5.6.3.3-1: SIP SUBSCRIBE from the SS-UE1
(Step 2, Table 5.6.3.2-1; Step 1, Annex A, Table A.2.7.3-1)**

Derivation Path: Annex A, Table A.2.7.4-1, condition PRESENCE-EVENT				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 5.6.3.3-2			
MIME body part		SIMPLE-FILTER		
MIME-part-headers				
MIME-part-body	SIMPLE-FILTER as described in Table 5.6.3.3-3			

Table 5.6.3.3-2: MCVideo-Info in SIP SUBSCRIBE (Table 5.6.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), 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	Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A		

Table 5.6.3.3-3: SIMPLE-FILTER in SIP SUBSCRIBE (Table 5.6.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.6-1, conditions MCVIDEO and PER-GROUP

**Table 5.6.3.3-4: SIP NOTIFY from the IUT (MCVideo Server)
(Step 2, Table 5.6.3.2-1; Step 3, Annex A, Table A.2.7.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.8-1, conditions MCVIDEO and PRESENCE-EVENT				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.6.3.3-5			

Table 5.6.3.3-5: PIDF in SIP NOTIFY (Table 5.6.3.3-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2				
Information Element	Value/remark	Comment	Reference	Condition
presence			ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.3.1	
entity attribute	Encrypted URI (note) with value set to px_MCVideo_Group_A_ID			
tuple				
id attribute	Encrypted URI (note) with value set to px_MCVideo_ID_User_A			
status				
affiliation				
group	not present			
client	Encrypted URI (note) with value set to px_MCVideo_Client_A_ID			
status	not present			
expires	Current time plus one hour			
tuple				
id attribute	Encrypted URI (note) with value set to px_MCVideo_ID_User_B			
status				
affiliation				
group	not present			
client	Encrypted URI (note) with value set to px_MCVideo_Client_B_ID			
status	not present			
expires	Current time plus one hour			
additionalData				
groupCallOngoing	"true"			

NOTE: Encrypted attribute as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.13.3-1.

Table 5.6.3.3-6: SIP SUBSCRIBE from the SS-UE1
(Step 3, Table 5.6.3.2-1; Step 1, Annex A, Table A.2.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.14-1, condition PRESENCE-EVENT, re SUBSCRIBE				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
value	"0"			
Message-body				
MIME body part		MCVideo-Info		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 5.6.3.3-2			
MIME body part		SIMPLE-FILTER		
MIME-part-headers				
MIME-part-body	SIMPLE-FILTER as described in Table 5.6.3.3-3			

Table 5.6.3.3-7: SIP NOTIFY from the IUT (MCVideo Server) (Step 2, Table 5.6.3.2-1; Step 3, Annex A, Table A.2.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.8-1, conditions MCVIDEO and PRESENCE-EVENT				
Information Element	Value/remark	Comment	Reference	Condition
Subscription-State			IETF RFC 6665 [14]	
substate-value	"terminated"			
expires	not present			
Message-body				
MIME body part		PIDF		
MIME-part-body	PIDF as described in Table 5.6.3.3-5			

6 MCVideo Server - MCVideo Client operation

6.1 Group call

6.1.1 Pre-arranged Group Calls

6.1.1.1 MCVideo Server - MCVideo Client / Pre-arranged Group Call / On-demand / Automatic Commencement Mode / Transmission Control / Upgrade to Emergency Group Call / Cancel Emergency State / Upgrade to Imminent Peril Group Call / Cancel Imminent Peril State

6.1.1.1.1 Test Purpose (TP)

(1)

```

with { IUT (MCVideo Server) connected to PLMN1 and having registered the clients}
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates a pre-arranged group call with automatic commencement
mode and implicit transmission control }
  then { IUT (MCVideo Server) accepts the call from the initiator and establishes the call with
all affiliated users of the group and sends transmission granted to the SS-UE1 (MCVideo Client) }
}

```

(2)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests the end of transmission control }
  then { IUT (MCVideo Server) sends transmission idle to the SS-UE1 (MCVideo Client) and sends
transmission idle to the SS-UE2 (MCVideo Client) }
}

```

(3)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode}
ensure that {
  when { the SS-UE1 (MCVideo Client) upgrades the call to emergency group call with implicit
transmission control }
  then { IUT (MCVideo Server) accepts the upgrade from the initiator and updates the call for all
affiliated users of the group and sends transmission granted to the SS-UE1 (MCVideo Client) }
}

```

(4)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests the transmission control}
  then { IUT (MCVideo Server) sends transmission granted to the SS-UE1 (MCVideo Client) and sends
media transmission notification to the SS-UE2 (MCVideo Client) }
}

```

(5)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests downgrade of the call to a normal group call }
  then { IUT (MCVideo Server) accepts the downgrade from the initiator and updates the call for
all affiliated users of the group without implicit transmission request }
}

```

(6)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode}
ensure that {
  when { the SS-UE1 (MCVideo Client) upgrades the call to imminent peril group call with implicit
transmission request }
  then { IUT (MCVideo Server) accepts the upgrade from the initiator and updates the call for all
affiliated users of the group and sends transmission granted to the SS-UE1 (MCVideo Client) }
}

```

(7)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Automatic Commencement Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) ends the Pre-arranged group call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the other participants }
}

```

6.1.1.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 9.2.1.3.1.1, 9.2.1.3.2, 9.2.1.3.3.1, 9.2.1.4.1.1, 9.2.1.4.1.2, 9.2.1.4.2, 9.2.1.4.3, 6.3.2.2.5.2, 6.2.3.1.2, 6.2.3.1.1, 9.2.1.2.1.3, 9.2.1.2.1.4, 9.2.1.2.1.5, 6.4, and ETSI TS 124 581 [9] (3GPP TS 24.581), clauses 6.3.2.2, 6.3.3, 6.4.2, 6.4.3, 6.4.4, 9.2.1. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.3.1.1]

"In the procedures in this clause:

- 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; and
- 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" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "prearranged", the participating MCVideo function:

...

- 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 shall 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 clause 7.3.

...

- 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 participating 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 clause 4.4. Otherwise, continue with the rest of the steps;

NOTE 3: If the SIP INVITE request contains an emergency indication or an imminent peril indication, the participating MCVideo function can by means beyond the scope of this specification choose to allow for an exception to the limit for the maximum simultaneous MCVideo sessions supported for the MCVideo user. Alternatively, a lower priority session of the MCVideo user could be terminated to allow for the new session.

- 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 clause 8.2.2.2.11 and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, shall perform the actions specified in clause 8.2.2.2.12 for implicit 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 release.

- 9) shall generate a SIP INVITE request as specified in clause 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 which was present in the incoming SIP INVITE request;
- 11) shall not copy the following header fields from the incoming SIP INVITE request to the outgoing SIP INVITE request, if they were present in the incoming SIP INVITE request:
 - a) Answer-Mode header field as specified in IETF RFC 5373 [27]; and
 - b) Priv-Answer-Mode header field as specified in IETF RFC 5373 [27];
- 12) shall set the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;
- 13) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the MCVideo client as specified in clause 6.3.2.1.1.1;

- 14) if the received SIP INVITE request contains an application/vnd.3gpp.location-info+xml MIME body and 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;
- 15) 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 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field of the SIP INVITE request from the MCVideo client; and

NOTE 8: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

- 16) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11].

...

Upon receipt of a SIP 2xx response in response to the above SIP INVITE request in step 15), the participating MCVideo function:

- 1) if the received SIP 2xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;
- 2) shall generate a SIP 200 (OK) response as in clause 6.3.2.1.5.2;
- 3) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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) 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;
- 7) if the procedures of clause 8.2.2.2.12 for implicit affiliation were performed in the present clause, shall complete the implicit affiliation by performing the procedures of clause 8.2.2.2.13;
- 8) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];
- 9) shall interact with Media Plane as specified in 3GPP TS 24.581 [5]; and
- 10) shall start the SIP Session timer according to rules and procedures of IETF RFC 4028 [23].

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 clause 8.2.2.2.12 were invoked in this procedure, shall perform the procedures of clause 8.2.2.2.14;..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.3.2]

"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.

NOTE 1: This clause covers on-demand session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

...

- 4) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;

...

- 6) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;
- 7) shall perform the automatic commencement procedures specified in clause 6.3.2.5.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; and
- 8) shall perform the manual commencement procedures specified in clause 6.3.2.6.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "manual-answer".

[ETSI TS 124 281 [8] (3GPP 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 clause 6.3.2.1.6."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.1.1]

"This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 9.2.1.4.2 or as the result of receiving a SIP 403 (Forbidden) response as described in this clause.

The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;
- 2) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited.;

NOTE 1: How the controlling MCVideo function finds the address of the terminating MCVideo participating function is out of the scope of the current release.

NOTE 2: If the terminating MCVideo user is part of a partner MCVideo system, then the public service identity can identify an entry point in the partner network that is able to identify the terminating participating MCVideo function.

- 3) shall set the P-Asserted-Identity header field to the public service identity of the controlling MCVideo function;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:
 - a) the <mcvideo-request-uri> element set to the MCVideo ID of the terminating user; and
 - b) the <mcvideo-calling-group-id> element set to the group identity;

NOTE 3: The <mcvideo-calling-user-id> is already included in the MIME body as a result of calling clause 6.3.3.1.2 in step 1).

- 5) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;

- 6) if the in-progress emergency state of the group is set to a value of "true" the controlling MCVideo function:
 - a) shall include a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in clause 6.3.3.1.19;
 - b) if the received SIP INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true":
 - i) shall include in the outgoing SIP INVITE request in the application/vnd.3gpp.mcvideo-info+xml MIME body an <emergency-ind> element set to a value of "true"; and
 - ii) if the <alert-ind> element is set to "true" in the received SIP INVITE request and the requesting MCVideo user and MCVideo group are authorised for the initiation of MCVideo emergency alerts as determined by the procedures of clause 6.3.3.1.13.1, shall populate the application/vnd.3gpp.mcvideo-info+xml MIME body and the application/vnd.3gpp.location-info+xml MIME body as specified in clause 6.3.3.1.12. Otherwise, shall set the <alert-ind> element to a value of "false"; and
 - c) if the in-progress imminent peril state of the group is set to a value of "true" shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <imminentperil-ind> element set to a value of "false";
- 7) if the in-progress emergency state of the group is set to a value of "false" and the in-progress imminent peril state of the group is set to a value of "true", the controlling MCVideo function:
 - a) shall include a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in clause 6.3.3.1.19; and
 - b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true";
- 8) if:
 - a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and
 - b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

then:

- a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:
 - i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and
 - ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request; and
- 9) shall send the SIP INVITE request towards the terminating network in accordance with 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response containing a Require header field with the option tag "100rel" and containing a P-Answer-State header field with the value "Unconfirmed" in response to the SIP INVITE request the controlling MCVideo function:

- 1) shall send a SIP PRACK request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;
- 2) shall send a SIP NOTIFY request to all participants with a subscription to the conference event package as specified in clause 9.2.3.4; and

- 3) shall increment the local counter of the number of SIP 200 (OK) responses received from invited members, by 1.

NOTE 4: The notifications above could be sent prior to the SIP 200 (OK) response being sent to the inviting MCVideo client. These notifications received by MCVideo clients that are group members do not mean that the group session will be successfully established.

NOTE 5: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.1.2]

"The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;
- 2) shall set the Request-URI to the public service identity of the non-controlling MCVideo function serving the group identity of the MCVideo group owned by the partner MCVideo system;
- 3) shall set the P-Asserted-Identity to the public service identity of the controlling MCVideo function;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:
 - a) the <mcvideo-request-uri> element set to the group identity of the MCVideo group hosted by the non-controlling MCVideo function in the partner MCVideo system; and
 - b) the <mcvideo-calling-group-id> element set to the group identity of the group served by the controlling MCVideo function;
- 5) shall include the Recv-Info header field set to g.3gpp.mcvideo-transmission-request;
- 6) if:
 - a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and
 - b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

then:

- a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:
 - i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and
 - ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request;
- 7) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1; and
- 8) shall send the SIP INVITE request towards the partner MCVideo system in accordance with 3GPP TS 24.229 [11].

...

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and

NOTE 3: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2.

- 2) if at least one of the invited MCVideo clients has subscribed to the conference package, shall subscribe to the conference event package in the non-controlling MCVideo function as specified in clause 9.2.3.4.3."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.2]

"In the procedures in this clause:

- 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) *indication of required group members in a SIP 183 (Session Progress) response refers to the <required> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to "true" in a SIP 183 (Session Progress) sent by the non-controlling MCVideo function of an MCVideo group;*
- 5) *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*
- 6) *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 controlling MCVideo function of an MCVideo group", the controlling MCVideo function:

- ...
- 4) *if received SIP 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 clause 6.3.3.1.17;*
 - 5) *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 clause 6.3.5.2;*
- ...
- 7) *shall perform the actions as described in clause 6.3.3.2.2;*
 - 8) *shall maintain a local counter of the number of SIP 200 (OK) responses received from invited members and shall initialise this local counter to zero;*
 - 9) *shall determine if an MCVideo group call for the group identity is already ongoing by determining if an MCVideo session identity has already been allocated for the group call and the MCVideo session is active;*
- ...
- 13) *if the MCVideo group call is not ongoing then:*
- ...
- c) *if the received SIP INVITE request contains an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined as determined in step 13) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;*
 - d) *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];*
 - e) *shall create a prearranged group session and allocate an MCVideo session identity for the prearranged group call, and shall handle timer TNG3 (group call timer) as specified in clause 6.3.3.5;*

- f) if the group identity in the "SIP INVITE request for controlling MCVideo function of an MCVideo group" is a TGI:
 - i) shall for each of the constituent MCVideo groups homed on the primary MCVideo system:
 - A) if the controlling MCVideo function does not own the MCVideo group identified by the MCVideo group ID, then generate a SIP INVITE request towards the MCVideo server that owns the MCVideo group identity by following the procedures in clause 9.2.1.4.1.2; and

NOTE 2: The MCVideo server that the SIP INVITE request is sent to acts as a non-controlling MCVideo function;

- B) if the controlling MCVideo function owns the MCVideo group identified by the MCVideo group ID then:
 - I) determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;
 - II) invite each group member determined in step A) above, to the group session, as specified in clause 9.2.1.4.1.1; and
 - III) interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and
 - ii) shall for each of the constituent MCVideo groups homed on the partner MCVideo system generate a SIP INVITE request for the MCVideo group identity homed on the partner MCVideo system as specified in clause 9.2.1.4.1.2; and
 - g) if the group identity in the SIP INVITE request for controlling MCVideo function of an MCVideo group is an MCVideo group ID:
 - i) shall determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;
 - ii) if necessary, shall start timer TNG1 (acknowledged call setup timer) according to the conditions stated in clause 6.3.3.3;
 - iii) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":
 - A) shall cache the information that this MCVideo user has initiated an MCVideo emergency call;
 - B) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall 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"; and
 - II) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in clause 6.3.3.1.16;
 - iv) if the in-progress emergency state of the group is set to a value of "false" and if the received SIP INVITE request contains an imminent peril indication set to a value of "true", the controlling MCVideo function shall:
 - A) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
 - B) if the in-progress imminent peril state of the group is set to a value of "false", shall set the in-progress imminent peril state of the group to a value of "true";
 - v) shall invite each group member determined in step 13)g)i) above, to the group session, as specified in clause 9.2.1.4.1.1; and

- vi) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and
- 14) if the MCVideo group call is ongoing then:
- ...
- c) 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];
- ...
- e) if the received SIP INVITE request contains an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined in step 14) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;
 - f) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":
 - i) shall cache the information that this MCVideo user 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 authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall cache the information that this MCVideo user has initiated an MCVideo emergency alert;
 - iii) 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 clause 6.3.3.1.16; and
 - C) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.6;
 - iv) if the in-progress imminent peril 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 imminent peril indication as specified in clause 6.3.3.1.11, setting 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
 - v) 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];
 - g) 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", the controlling MCVideo function:
 - i) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
 - ii) if the in-progress imminent peril state of the group is set to a value of "false":
 - A) shall set the in-progress imminent peril state of the group to a value of "true";
 - B) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.15; and
 - C) 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

iii) if the in-progress imminent peril 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 imminent peril indication as specified in clause 6.3.3.1.11, setting 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];
- h) shall generate a SIP 200 (OK) response as specified in the clause 6.3.3.2.4.2;
- i) 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 clause 6.3.3.2.1;
- j) shall include in the SIP 200 (OK) response with the warning text set to "123 MCVideo session already exists" as specified in clause 4.4;
- k) if the received SIP re-INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- l) 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" 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 clause 4.4;

NOTE 4: 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.

- m) shall interact with media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 5: Resulting media plane processing is completed before the next step is performed.

- n) shall send the SIP 200 (OK) response towards the inviting MCVideo client or inviting non-controlling MCVideo function according to 3GPP TS 24.229 [11];
- o) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4;

NOTE 6: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- p) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11];
- q) Upon receiving a SIP ACK to the above SIP 200 (OK) response and the SIP 200 (OK) response contained a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall follow the procedures in clause 6.3.3.1.18; and
- r) shall not continue with the rest of the clause.

Upon receiving a SIP 183 (Session Progress) response to the SIP INVITE request specified in clause 9.2.1.4.1 containing a P-Answer-State header field with the value "Unconfirmed" as specified in IETF RFC 4964 [30], the timer TNG1 (acknowledged call setup timer) is not running, the controlling MCVideo function supports media buffering and the SIP final response is not yet sent to the inviting MCVideo client:

- 1) shall generate a SIP 200 (OK) response to SIP INVITE request as specified in the clause 6.3.3.2.3.2;
- ...
- 3) 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 clause 6.3.3.2.1;
- 4) shall include a P-Answer-State header field with the value "Unconfirmed";

- 5) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- 6) 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 clause 4.4;
- 7) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 7: Resulting user plane processing is completed before the next step is performed.

- 8) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 9) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 8: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 10) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response for a SIP INVITE request as specified in clause 9.2.1.4.1.2 containing an indication of required group members, the timer TNG1 (acknowledged call setup timer) is running and all SIP 200 (OK) responses have been received to all SIP INVITE requests sent to MCVideo clients specified in clause 9.2.1.4.1.1, then the controlling MCVideo function shall wait until the SIP 200 (OK) response has been received to the SIP INVITE request specified in clause 9.2.1.4.1.2 before generating a SIP 200 (OK) response to the "SIP INVITE request for controlling MCVideo function of an MCVideo group".

Upon receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1 that was sent to an affiliated and <on-network-required> group member as specified in 3GPP TS 24.481 [24]; and

- 1) if the MCVideo ID in the SIP 200 (OK) response matches to the MCVideo ID in the corresponding SIP INVITE request;
- 2) there are no outstanding SIP 200 (OK) responses to SIP INVITE requests which were sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24]; and
- 3) there is no outstanding SIP 200 (OK) response to a SIP INVITE request sent in clause 9.2.1.4.1.2 where the SIP 183 (Session Progress) response contained an indication of required group members;

the controlling MCVideo function:

- 1) shall stop timer TNG1 (acknowledged call setup timer) as described in clause 6.3.3.3;
- 2) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;
- ...
- 4) 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 clause 6.3.3.2.1;

- 5) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 9: Resulting media plane processing is completed before the next step is performed.

- 6) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 7) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 10: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 8) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon:

- 1) receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1;
- 2) the timer TNG1 (acknowledged call setup timer) is not running;
- 3) the local counter of the number of SIP 200 (OK) responses received from invited members is equal to the value of the <on-network-minimum-number-to-start> element of the group document;
- 4) the controlling MCVideo function supports media buffering; and
- 5) the SIP final response has not yet been sent to the inviting MCVideo client;

the controlling MCVideo function according to local policy:

- 1) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.2;
- ...
- 3) 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 clause 6.3.3.2.1;
- 4) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- 5) 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 clause 4.4;
- 6) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 11: Resulting media plane processing is completed before the next step is performed.

- 7) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 8) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 12: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 9) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon expiry of timer TNG1 (acknowledged call setup timer), if there are outstanding SIP 200 (OK) responses to SIP INVITE requests sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24], the controlling MCVideo function shall follow the procedures specified in clause 6.3.3.3.

...

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 clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.3]

"Upon receiving a SIP BYE request the controlling MCVideo function shall follow the procedures as specified in clause 6.3.3.2.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.3.2.2.5.2]

"When receiving a "SIP INVITE request for terminating participating MCVideo function" for an on-demand session that requires automatic commencement mode the participating MCVideo function:

- 1) *if:*
 - a) *the incoming SIP INVITE request contained a Priv-Answer-Mode header field set to the value of "Auto";*
 - b) *no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; or*
 - c) *the incoming SIP INVITE request contained an Answer-Mode header field set to "Auto" and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer";*

then:

- a) *shall generate a SIP 183 (Session Progress) response to the "SIP INVITE request for terminating participating MCVideo function" as specified in clause 6.3.2.2.4.1; and*

NOTE: *The SIP 183 (session Progress) response can be sent reliably or unreliably depending on the content of the received SIP INVITE request. Regardless of if the SIP 183 (Session Progress) response is sent reliably or unreliably, SDP is not included in the SIP 183 (Session Progress) response.*

- b) *shall set the P-Answer-State header field to "Unconfirmed" in the SIP 183 (Session Progress) response;*
- 2) *shall copy the public user identity contained in the Request-URI of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the SIP 183 (Session Progress) response;*
- 3) *shall generate a SIP INVITE request as specified in clause 6.3.2.2.3;*
- 4) *shall set the Request-URI to the public user identity associated to the MCVideo ID of the MCVideo user to be invited;*
- 5) *shall perform the procedures specified in clause 6.3.2.2.9 to include any MIME bodies in the received SIP INVITE request, into the outgoing SIP INVITE request;*
- 6) *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;*
- 7) *if the Priv-Answer-Mode header field is present in the incoming SIP INVITE request with a value of "Auto", shall include a Priv-Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request. Otherwise, if the Answer-Mode header field is present in the incoming SIP INVITE request, the participating MCVideo function shall include an Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request;*
- 8) *if no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer", shall set the Answer-Mode header field to "Auto" in the outgoing SIP INVITE request;*
- 9) *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 clause 6.3.2.2.1;*
- 10) *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; and*

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

If the SIP 183 (Session Progress) response was sent reliably, then upon receiving a SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, 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) if the SIP 183 (Session Progress) was sent unreliably, shall send the SIP 200 (OK) response immediately; and
- 2) if the SIP 183 (Session Progress) was sent reliably and,
 - a) if the SIP PRACK request to the SIP 183 (Session Progress) response has been received by the participating MCVideo function and the SIP 200 (OK) response to the SIP PRACK request has been sent, shall send the SIP 200 (OK) response immediately;
 - b) if the SIP PRACK request to the SIP 183 (Session Progress) response has not yet been received, then upon receipt of the SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, according to 3GPP TS 24.229 [11], before sending the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function".

When the participating MCVideo function sends the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as described in the clause 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 clause 6.3.2.2.1;
- 3) shall copy the P-Asserted-Identity header field from the incoming SIP 200 (OK) response to the outgoing SIP 200 (OK) response;
- 4) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 5) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

The participating MCVideo function shall forward any other SIP response that does not contain SDP along the signalling path to the originating network according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.2.3.1.2]

"When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in clause 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."

[ETSI TS 124 281 [8] (3GPP 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 clause 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 clause and as specified in IETF RFC 5626 [35]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.2.1.3]

"This clause covers both on-demand session and pre-established 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 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.

...

- 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 by following the procedures in clause 6.2.8.1.1;
 - b) if an indication of an MCVideo emergency alert is to be included, shall perform the procedures specified in clause 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 clause 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 by following the procedures in clause 6.2.8.1.9; and
 - b) shall include a Resource-Priority header field and comply with the procedures in clause 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 clause 6.2.1;
- 6) if an implicit transmission request is required, shall indicate this as specified in clause 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 clause 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 clause 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 clause 6.2.8.1.5."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.2.1.4]

"This clause 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:

...

- 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 clause 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 clause 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 [11] with the clarifications specified in clause 6.2.1;
- 7) shall include a Resource-Priority header field and comply with the procedures in clause 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 clause 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 clause 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."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.2.1.5]

"This clause 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:

...

- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.1.11; and
- 3) shall include a Resource-Priority header field and comply with the procedures in clause 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 clause 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 "MVIg 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 "MVIg 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."

[ETSI TS 124 281 [8] (3GPP 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 that is not used for a remotely initiated ambient viewing call; and*
- 2) includes the "mc_implicit_request" 'fmtp' 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.*

An initial SIP INVITE request fulfilling the following criteria shall be regarded by the MCVideo server as an implicit request to grant permission to send media to the terminating MCVideo client when the originating MCVideo client:

- 1) initiates an MCVideo session that is a remotely initiated ambient viewing call; and*
- 2) includes the "mc_implicit_request" 'fmtp' 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" 'fmtp' 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."

[ETSI TS 124 581 [9] (3GPP 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.

When an MCVideo call is established a new instance of the transmission control server state machine for 'general reception 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 reception 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 rejoin 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 clause 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."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 6.3.3]

"When an MCVideo client leaves an MCVideo call and the MCVideo call remains ongoing with the other MCVideo clients, the transmission control server follows a two-step procedure.

Step 1 The MCVideo server stops sending transmission control messages and RTP media packets to the MCVideo client leaving the MCVideo call and the MCVideo server discards transmission control messages and RTP media packets received from the MCVideo client leaving the MCVideo call.

Step 2 When the application and signalling plane has determined that the MCVideo call with this transmission participant has been released, the corresponding instance of the transmission control server state machine for 'basic transmission control operation towards the transmission participant' and 'basic reception control operation towards the transmission participant' is released.

When an MCVideo call is released, the transmission control server follows a two-step procedure.

Step 1 The MCVideo server stops sending transmission control messages and RTP media packets to all transmission participants in the MCVideo call.

Step 2 When the application and signalling plane has determined that the MCVideo call has been released, the corresponding instance of the transmission control server state machine for 'general transmission control operation' and 'general reception control operation' are also terminated, along with any 'basic transmission control operation towards the transmission participant' and any 'basic reception control operation towards the transmission participant' state machines for the transmission participants of this call.

The transmission control server state machine for general transmission control operation initiates the MCVideo call release depending on the release policy specified in 3GPP TS 24.281 [2]."

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or*
 - iii. *the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 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 clause 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 clause 10.2."*

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or*
 - ii. *the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 14.2.3 in the latest received MBMS bearer listening status report, shall perform actions as specified in clause 10.2."*

[ETSI TS 124 581 [9] (3GPP 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 clause 9.3.2; and*
2. *in case of an on-demand session, shall release the media resources associated with the session."*

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 9.2.1]

"The transmission control messages are coded as described in clause 9.1.2 where the transmission control message is part of the application-dependent data.

For the transmission control protocol the ASCII name string is: MCVx (Mission Critical Video x) with x=0, 1 or 2 as specified in clause 9.1.2.

A list of transmission control messages can be found in clause 9.2.2.1.

The transmission control specific fields are specified in clause 9.2.3."

6.1.1.1.3 Test description

6.1.1.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) are affiliated to the Prearranged group.

- The IUT (MCVideo Server) is the controlling server of the Prearranged group.

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 SS-UE1 (MCVideo Client) request the establishment of a group call to SS-UE2 (MCVideo Client) with automatic commencement mode and implicit transmission request.	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.1.3-1 to establish a pre-arranged group call with automatic commencement mode and implicit transmission control request according to option b.ii of note in Annex A, Table A.3.1.3-1?	-	-	1	P
3	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	2	P
5	Make the SS-UE1 (MCVideo Client) request upgrade of the call to an emergency group call with implicit transmission request.	-	-	-	-
6	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to upgrade the call to emergency group call with implicit transmission request according to option b.ii of note in Annex A, Table A.3.1.3-1?	-	-	3	P
7	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
8	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	2	P
9	Make the SS-UE1 (MCVideo Client) request transmission.	-	-	-	-
10	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1?	-	-	4	P
11	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
12	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	2	P
13	Make the SS-UE1 (MCVideo Client) request downgrade of the call to a normal group call.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
14	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to downgrade the call without implicit transmission request, with option a of note on Table A.3.1.3-1?	-	-	5	P
15	Make the SS-UE1 (MCVideo Client) request transmission.	-	-	-	-
16	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1?	-	-	4	P
17	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
18	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	2	P
19	Make the SS-UE1 (MCVideo Client) request upgrade of the call to an imminent peril group call with implicit transmission request.	-	-	-	-
20	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to upgrade the call to imminent peril group call with implicit transmission request according to option b.ii of note in Annex A, Table A.3.1.3-1?	-	-	6	P
21	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
22	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	2	P
23	Make the SS-UE1 (MCVideo Client) request transmission.	-	-	-	-
24	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1?	-	-	4	P
25	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
26	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	2	P
27	Make the SS-UE1 (MCVideo Client) request downgrade of the call to a normal group call.	-	-	-	-
28	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to downgrade the call without implicit transmission request, with option a of note on Table A.3.1.3-1?	-	-	5	P
29	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
30	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	7	P

6.1.1.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.1.1.1.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.1.3.3-2: SIP INVITE from the IUT (MCVideo Server) (Step 2, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.1.3.3-3: SIP 200 (OK) from the SS-UE2 (Steps 2, 6, 14, 20 and 28, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-7, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.1.3.3-4: SIP 200 (OK) from the IUT (MCVideo Server) (Steps 2, 6, 14, 20 and 28, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-9, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.1.3.3-5: SIP re-INVITE from the SS-UE1 (Step 6, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with conditions GROUP-CALL, re_INVITE and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

Table 6.1.1.1.3.3-6: SIP re-INVITE from the IUT (MCVideo Server) (Step 6, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition GROUP-CALL, re_INVITE and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

Table 6.1.1.1.3.3-7: SIP re-INVITE from the SS-UE1 (Steps 14 and 28, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with conditions GROUP-CALL and re_INVITE.
NOTE: Conditions are also applied to all body parts.

Table 6.1.1.1.3.3-8: SIP re-INVITE from the IUT (MCVideo Server) (Steps 14 and 28, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition GROUP-CALL and re_INVITE.

NOTE: Conditions are also applied to all body parts.

Table 6.1.1.1.3.3-9: SIP re-INVITE from the SS-UE1 (Step 20, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with conditions GROUP-CALL, re_INVITE and IMPERIL-CALL.

NOTE: Conditions are also applied to all body parts.

Table 6.1.1.1.3.3-10: SIP re-INVITE from the IUT (MCVideo Server) (Step 20, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with conditions GROUP-CALL, re_INVITE and IMPERIL-CALL.

NOTE: Conditions are also applied to all body parts.

Table 6.1.1.1.3.3-11: Transmission Idle from the IUT (MCVideo Server) (Steps 8 and 12, Table 6.1.1.1.3.2-1; Steps 4 and 5, Annex A, Table A.3.8.3-1)

Derivation Path: Annex A, Table A.3.8.4-6 with condition EMERGENCY-CALL.

Table 6.1.1.1.3.3-12: Transmission Request from the SS-UE1 (Step 10, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.7.3-1)

Derivation Path: Annex A, Table A.3.7.4-1, with condition EMERGENCY-CALL.

Table 6.1.1.1.3.3-13: Transmission Granted from the IUT (MCVideo Server) (Steps 6 and 10, Table 6.1.1.1.3.2-1; Step 3a1 or 3b1, Annex A, Table A.3.7.3-1; Step 2a1, Annex A, Table A.3.1.3-1)

Derivation Path: Annex A, Table A.3.7.4-2 or A.3.7.4-3 (note), with condition EMERGENCY-CALL.

NOTE: Depends on server implementation.

Table 6.1.1.1.3.3-14: Media Transmission Notification from the IUT (MCVideo Server) (Steps 6 and 10, Table 6.1.1.1.3.2-1; Step 3a3 or 3b2, Annex A, Table A.3.7.3-1; Step 3a1, Annex A, Table A.3.1.3-1)

Derivation Path: Annex A, Table A.3.7.4-4 or A.3.7.4-5 (NOTE 1), with condition EMERGENCY-CALL.

NOTE: Depends on server implementation.

Table 6.1.1.1.3.3-15: Transmission Idle from the IUT (MCVideo Server) (Steps 22 and 26, Table 6.1.1.1.3.2-1; Steps 4 and 5, Annex A, Table A.3.8.3-1)

Derivation Path: Annex A, Table A.3.8.4-6 with condition IMPERIL-CALL.

Table 6.1.1.1.3.3-16: Transmission Request from the SS-UE1 (Step 24, Table 6.1.1.1.3.2-1; Step 1, Annex A, Table A.3.7.3-1)

Derivation Path: Annex A, Table A.3.7.4-1, with condition IMPERIL-CALL.

**Table 6.1.1.1.3.3-17: Transmission Granted from the IUT (MCVideo Server)
(Steps 20 and 24, Table 6.1.1.1.3.2-1; Step 3a1 or 3b1, Annex A, Table A.3.7.3-1;
Step 2a1, Annex A, Table A.3.1.3-1)**

Derivation Path: Annex A, Table A.3.7.4-2 or A.3.7.4-3 (note), with condition IMPERIL-CALL.
NOTE: Depends on server implementation.

**Table 6.1.1.1.3.3-18: Media Transmission Notification from the IUT (MCVideo Server)
(Steps 20 and 24, Table 6.1.1.1.3.2-1; Step 3a3 or 3b2, Annex A, Table A.3.7.3-1;
Step 3a1, Annex A, Table A.3.1.3-1)**

Derivation Path: Annex A, Table A.3.7.4-4 or A.3.7.4-5 (note), with condition IMPERIL-CALL.
NOTE: Depends on server implementation.

6.1.1.2 MCVideo Server - MCVideo Client / Pre-arranged Group Call / On-demand / Emergency Group Call

6.1.1.2.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 and having registered the clients}
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates an emergency pre-arranged group call with automatic
  commencement mode and implicit transmission control }
  then { IUT (MCVideo Server) accepts the call from the initiator and establishes the call with
  all affiliated users of the group and sends transmission granted to the SS-UE1 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having established an emergency MCVideo On-demand Pre-arranged Group
Call with Automatic Commencement Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests to end the transmission control }
  then { IUT (MCVideo Server) sends transmission control idle to the SS-UE1 (MCVideo Client) and
sends transmission control idle to the SS-UE2 (MCVideo Client) }
}
```

(3)

```
with { IUT (MCVideo Server) having established an emergency MCVideo On-demand Pre-arranged Group
Call with
Automatic Commencement Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) ends the Pre-arranged group call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the other participants }
}
```

6.1.1.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 9.2.1.3.1.1, 9.2.1.3.2, 9.2.1.3.3.1, 9.2.1.4.1.1, 9.2.1.4.1.2, 9.2.1.4.2, 9.2.1.4.3, 6.3.2.2.5.2, 6.2.3.1.2, 6.2.3.1.1, and ETSI TS 124 581 [9] (3GPP TS 24.581), clauses 6.3.2.2, 6.3.3, 6.4.2, 6.4.3, 6.4.4, 9.2.1. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.3.1.1]

"In the procedures in this clause:

- 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; and

- 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" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "prearranged", the participating MCVideo function:

...

- 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 shall 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 clause 7.3.

...

- 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 participating 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 clause 4.4. Otherwise, continue with the rest of the steps;*

NOTE 3: If the SIP INVITE request contains an emergency indication or an imminent peril indication, the participating MCVideo function can by means beyond the scope of this specification choose to allow for an exception to the limit for the maximum simultaneous MCVideo sessions supported for the MCVideo user. Alternatively, a lower priority session of the MCVideo user could be terminated to allow for the new session.

- 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 clause 8.2.2.2.11 and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, shall perform the actions specified in clause 8.2.2.2.12 for implicit 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 release.

- 9) *shall generate a SIP INVITE request as specified in clause 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 which was present in the incoming SIP INVITE request;*
- 11) *shall not copy the following header fields from the incoming SIP INVITE request to the outgoing SIP INVITE request, if they were present in the incoming SIP INVITE request:*
 - a) *Answer-Mode header field as specified in IETF RFC 5373 [27]; and*
 - b) *Priv-Answer-Mode header field as specified in IETF RFC 5373 [27];*
- 12) *shall set the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;*
- 13) *shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the MCVideo client as specified in clause 6.3.2.1.1.1;*

- 14) if the received SIP INVITE request contains an application/vnd.3gpp.location-info+xml MIME body and 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;
- 15) 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 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field of the SIP INVITE request from the MCVideo client; and

NOTE 8: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

- 16) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11].

...

Upon receipt of a SIP 2xx response in response to the above SIP INVITE request in step 15), the participating MCVideo function:

- 1) if the received SIP 2xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;
- 2) shall generate a SIP 200 (OK) response as in clause 6.3.2.1.5.2;
- 3) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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) 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;
- 7) if the procedures of clause 8.2.2.2.12 for implicit affiliation were performed in the present clause, shall complete the implicit affiliation by performing the procedures of clause 8.2.2.2.13;
- 8) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];
- 9) shall interact with Media Plane as specified in 3GPP TS 24.581 [5]; and
- 10) shall start the SIP Session timer according to rules and procedures of IETF RFC 4028 [23].

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 clause 8.2.2.2.12 were invoked in this procedure, shall perform the procedures of clause 8.2.2.2.14;..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.3.2]

"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.

NOTE 1: This clause covers on-demand session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

...

- 4) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;

...

- 6) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;
- 7) shall perform the automatic commencement procedures specified in clause 6.3.2.5.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; and
- 8) shall perform the manual commencement procedures specified in clause 6.3.2.6.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "manual-answer".

[ETSI TS 124 281 [8] (3GPP 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 clause 6.3.2.1.6."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.1.1]

"This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 9.2.1.4.2 or as the result of receiving a SIP 403 (Forbidden) response as described in this clause.

The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;
- 2) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited.;

NOTE 1: How the controlling MCVideo function finds the address of the terminating MCVideo participating function is out of the scope of the current release.

NOTE 2: If the terminating MCVideo user is part of a partner MCVideo system, then the public service identity can identify an entry point in the partner network that is able to identify the terminating participating MCVideo function.

- 3) shall set the P-Asserted-Identity header field to the public service identity of the controlling MCVideo function;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:
 - a) the <mcvideo-request-uri> element set to the MCVideo ID of the terminating user; and
 - b) the <mcvideo-calling-group-id> element set to the group identity;

NOTE 3: The <mcvideo-calling-user-id> is already included in the MIME body as a result of calling clause 6.3.3.1.2 in step 1).

- 5) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;

- 6) if the in-progress emergency state of the group is set to a value of "true" the controlling MCVideo function:
 - a) shall include a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in clause 6.3.3.1.19;
 - b) if the received SIP INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true":
 - i) shall include in the outgoing SIP INVITE request in the application/vnd.3gpp.mcvideo-info+xml MIME body an <emergency-ind> element set to a value of "true"; and
 - ii) if the <alert-ind> element is set to "true" in the received SIP INVITE request and the requesting MCVideo user and MCVideo group are authorised for the initiation of MCVideo emergency alerts as determined by the procedures of clause 6.3.3.1.13.1, shall populate the application/vnd.3gpp.mcvideo-info+xml MIME body and the application/vnd.3gpp.location-info+xml MIME body as specified in clause 6.3.3.1.12. Otherwise, shall set the <alert-ind> element to a value of "false"; and
 - c) if the in-progress imminent peril state of the group is set to a value of "true" shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <imminentperil-ind> element set to a value of "false";
- 7) if the in-progress emergency state of the group is set to a value of "false" and the in-progress imminent peril state of the group is set to a value of "true", the controlling MCVideo function:
 - a) shall include a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in clause 6.3.3.1.19; and
 - b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true";
- 8) if:
 - a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and
 - b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

then:

- a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:
 - i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and
 - ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request; and
- 9) shall send the SIP INVITE request towards the terminating network in accordance with 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response containing a Require header field with the option tag "100rel" and containing a P-Answer-State header field with the value "Unconfirmed" in response to the SIP INVITE request the controlling MCVideo function:

- 1) shall send a SIP PRACK request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;
- 2) shall send a SIP NOTIFY request to all participants with a subscription to the conference event package as specified in clause 9.2.3.4; and

- 3) shall increment the local counter of the number of SIP 200 (OK) responses received from invited members, by 1.

NOTE 4: The notifications above could be sent prior to the SIP 200 (OK) response being sent to the inviting MCVideo client. These notifications received by MCVideo clients that are group members do not mean that the group session will be successfully established.

NOTE 5: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.1.2]

"The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;
- 2) shall set the Request-URI to the public service identity of the non-controlling MCVideo function serving the group identity of the MCVideo group owned by the partner MCVideo system;
- 3) shall set the P-Asserted-Identity to the public service identity of the controlling MCVideo function;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:
 - a) the <mcvideo-request-uri> element set to the group identity of the MCVideo group hosted by the non-controlling MCVideo function in the partner MCVideo system; and
 - b) the <mcvideo-calling-group-id> element set to the group identity of the group served by the controlling MCVideo function;
- 5) shall include the Recv-Info header field set to g.3gpp.mcvideo-transmission-request;
- 6) if:
 - a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and
 - b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

then:

- a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:
 - i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and
 - ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request;
- 7) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1; and
- 8) shall send the SIP INVITE request towards the partner MCVideo system in accordance with 3GPP TS 24.229 [11].

...

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and

NOTE 3: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2.

- 2) if at least one of the invited MCVideo clients has subscribed to the conference package, shall subscribe to the conference event package in the non-controlling MCVideo function as specified in clause 9.2.3.4.3."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.2]

"In the procedures in this clause:

- 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) *indication of required group members in a SIP 183 (Session Progress) response refers to the <required> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to "true" in a SIP 183 (Session Progress) sent by the non-controlling MCVideo function of an MCVideo group;*
- 5) *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*
- 6) *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 controlling MCVideo function of an MCVideo group", the controlling MCVideo function:

- ...
- 4) *if received SIP 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 clause 6.3.3.1.17;*
 - 5) *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 clause 6.3.5.2;*
- ...
- 7) *shall perform the actions as described in clause 6.3.3.2.2;*
 - 8) *shall maintain a local counter of the number of SIP 200 (OK) responses received from invited members and shall initialise this local counter to zero;*
 - 9) *shall determine if an MCVideo group call for the group identity is already ongoing by determining if an MCVideo session identity has already been allocated for the group call and the MCVideo session is active;*
- ...
- 13) *if the MCVideo group call is not ongoing then:*
- ...
- c) *if the received SIP INVITE request contains an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined as determined in step 13) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;*
 - d) *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];*
 - e) *shall create a prearranged group session and allocate an MCVideo session identity for the prearranged group call, and shall handle timer TNG3 (group call timer) as specified in clause 6.3.3.5;*

- f) if the group identity in the "SIP INVITE request for controlling MCVideo function of an MCVideo group" is a TGI:
 - i) shall for each of the constituent MCVideo groups homed on the primary MCVideo system:
 - A) if the controlling MCVideo function does not own the MCVideo group identified by the MCVideo group ID, then generate a SIP INVITE request towards the MCVideo server that owns the MCVideo group identity by following the procedures in clause 9.2.1.4.1.2; and

NOTE 2: The MCVideo server that the SIP INVITE request is sent to acts as a non-controlling MCVideo function;

- B) if the controlling MCVideo function owns the MCVideo group identified by the MCVideo group ID then:
 - I) determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;
 - II) invite each group member determined in step A) above, to the group session, as specified in clause 9.2.1.4.1.1; and
 - III) interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and
 - ii) shall for each of the constituent MCVideo groups homed on the partner MCVideo system generate a SIP INVITE request for the MCVideo group identity homed on the partner MCVideo system as specified in clause 9.2.1.4.1.2; and
 - g) if the group identity in the SIP INVITE request for controlling MCVideo function of an MCVideo group is an MCVideo group ID:
 - i) shall determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;
 - ii) if necessary, shall start timer TNG1 (acknowledged call setup timer) according to the conditions stated in clause 6.3.3.3;
 - iii) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":
 - A) shall cache the information that this MCVideo user has initiated an MCVideo emergency call;
 - B) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall 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"; and
 - II) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in clause 6.3.3.1.16;
 - iv) if the in-progress emergency state of the group is set to a value of "false" and if the received SIP INVITE request contains an imminent peril indication set to a value of "true", the controlling MCVideo function shall:
 - A) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
 - B) if the in-progress imminent peril state of the group is set to a value of "false", shall set the in-progress imminent peril state of the group to a value of "true";
 - v) shall invite each group member determined in step 13)g)i) above, to the group session, as specified in clause 9.2.1.4.1.1; and

- vi) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and
- 14) if the MCVideo group call is ongoing then:

...

- c) 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];

...

- e) if the received SIP INVITE request contains an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined in step 14) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;
- f) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":
- i) shall cache the information that this MCVideo user 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 authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall cache the information that this MCVideo user has initiated an MCVideo emergency alert;
 - iii) 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 clause 6.3.3.1.16; and
 - C) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.6;
 - iv) if the in-progress imminent peril 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 imminent peril indication as specified in clause 6.3.3.1.11, setting 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
 - v) 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];
- g) 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", the controlling MCVideo function:
- i) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
 - ii) if the in-progress imminent peril state of the group is set to a value of "false":
 - A) shall set the in-progress imminent peril state of the group to a value of "true";
 - B) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.15; and
 - C) 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

iii) if the in-progress imminent peril 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 imminent peril indication as specified in clause 6.3.3.1.11, setting 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];
- h) shall generate a SIP 200 (OK) response as specified in the clause 6.3.3.2.4.2;
- i) 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 clause 6.3.3.2.1;
- j) shall include in the SIP 200 (OK) response with the warning text set to "123 MCVideo session already exists" as specified in clause 4.4;
- k) if the received SIP re-INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- l) 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" 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 clause 4.4;

NOTE 4: 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.

- m) shall interact with media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 5: Resulting media plane processing is completed before the next step is performed.

- n) shall send the SIP 200 (OK) response towards the inviting MCVideo client or inviting non-controlling MCVideo function according to 3GPP TS 24.229 [11];
- o) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4;

NOTE 6: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- p) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11];
- q) Upon receiving a SIP ACK to the above SIP 200 (OK) response and the SIP 200 (OK) response contained a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall follow the procedures in clause 6.3.3.1.18; and
- r) shall not continue with the rest of the clause.

Upon receiving a SIP 183 (Session Progress) response to the SIP INVITE request specified in clause 9.2.1.4.1 containing a P-Answer-State header field with the value "Unconfirmed" as specified in IETF RFC 4964 [30], the timer TNG1 (acknowledged call setup timer) is not running, the controlling MCVideo function supports media buffering and the SIP final response is not yet sent to the inviting MCVideo client:

- 1) shall generate a SIP 200 (OK) response to SIP INVITE request as specified in the clause 6.3.3.2.3.2;
- ...
- 3) 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 clause 6.3.3.2.1;
- 4) shall include a P-Answer-State header field with the value "Unconfirmed";

- 5) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- 6) 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 clause 4.4;
- 7) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 7: Resulting user plane processing is completed before the next step is performed.

- 8) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 9) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 8: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 10) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response for a SIP INVITE request as specified in clause 9.2.1.4.1.2 containing an indication of required group members, the timer TNG1 (acknowledged call setup timer) is running and all SIP 200 (OK) responses have been received to all SIP INVITE requests sent to MCVideo clients specified in clause 9.2.1.4.1.1, then the controlling MCVideo function shall wait until the SIP 200 (OK) response has been received to the SIP INVITE request specified in clause 9.2.1.4.1.2 before generating a SIP 200 (OK) response to the "SIP INVITE request for controlling MCVideo function of an MCVideo group".

Upon receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1 that was sent to an affiliated and <on-network-required> group member as specified in 3GPP TS 24.481 [24]; and

- 1) if the MCVideo ID in the SIP 200 (OK) response matches to the MCVideo ID in the corresponding SIP INVITE request;
- 2) there are no outstanding SIP 200 (OK) responses to SIP INVITE requests which were sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24]; and
- 3) there is no outstanding SIP 200 (OK) response to a SIP INVITE request sent in clause 9.2.1.4.1.2 where the SIP 183 (Session Progress) response contained an indication of required group members;

the controlling MCVideo function:

- 1) shall stop timer TNG1 (acknowledged call setup timer) as described in clause 6.3.3.3;
- 2) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;
- ...
- 4) 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 clause 6.3.3.2.1;
- 5) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 9: Resulting media plane processing is completed before the next step is performed.

- 6) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 7) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 10: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 8) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon:

- 1) receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1;
- 2) the timer TNG1 (acknowledged call setup timer) is not running;
- 3) the local counter of the number of SIP 200 (OK) responses received from invited members is equal to the value of the <on-network-minimum-number-to-start> element of the group document;
- 4) the controlling MCVideo function supports media buffering; and
- 5) the SIP final response has not yet been sent to the inviting MCVideo client;

the controlling MCVideo function according to local policy:

- 1) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.2;
- ...
- 3) 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 clause 6.3.3.2.1;
- 4) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- 5) 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 clause 4.4;
- 6) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 11: Resulting media plane processing is completed before the next step is performed.

- 7) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 8) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 12: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 9) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon expiry of timer TNG1 (acknowledged call setup timer), if there are outstanding SIP 200 (OK) responses to SIP INVITE requests sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24], the controlling MCVideo function shall follow the procedures specified in clause 6.3.3.3.

...

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 clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.3]

"Upon receiving a SIP BYE request the controlling MCVideo function shall follow the procedures as specified in clause 6.3.3.2.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.3.2.2.5.2]

"When receiving a "SIP INVITE request for terminating participating MCVideo function" for an on-demand session that requires automatic commencement mode the participating MCVideo function:

- 1) if:
 - a) the incoming SIP INVITE request contained a Priv-Answer-Mode header field set to the value of "Auto";
 - b) no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; or
 - c) the incoming SIP INVITE request contained an Answer-Mode header field set to "Auto" and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer";

then:

- a) shall generate a SIP 183 (Session Progress) response to the "SIP INVITE request for terminating participating MCVideo function" as specified in clause 6.3.2.2.4.1; and

NOTE: The SIP 183 (session Progress) response can be sent reliably or unreliably depending on the content of the received SIP INVITE request. Regardless of if the SIP 183 (Session Progress) response is sent reliably or unreliably, SDP is not included in the SIP 183 (Session Progress) response.

- b) shall set the P-Answer-State header field to "Unconfirmed" in the SIP 183 (Session Progress) response;
- 2) shall copy the public user identity contained in the Request-URI of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the SIP 183 (Session Progress) response;
- 3) shall generate a SIP INVITE request as specified in clause 6.3.2.2.3;
- 4) shall set the Request-URI to the public user identity associated to the MCVideo ID of the MCVideo user to be invited;
- 5) shall perform the procedures specified in clause 6.3.2.2.9 to include any MIME bodies in the received SIP INVITE request, into the outgoing SIP INVITE request;
- 6) 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;
- 7) if the Priv-Answer-Mode header field is present in the incoming SIP INVITE request with a value of "Auto", shall include a Priv-Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request. Otherwise, if the Answer-Mode header field is present in the incoming SIP INVITE request, the participating MCVideo function shall include an Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request;
- 8) if no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer", shall set the Answer-Mode header field to "Auto" in the outgoing SIP INVITE request;
- 9) 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 clause 6.3.2.2.1;
- 10) 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; and
- 11) shall send the SIP INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

If the SIP 183 (Session Progress) response was sent reliably, then upon receiving a SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, 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) if the SIP 183 (Session Progress) was sent unreliably, shall send the SIP 200 (OK) response immediately; and
- 2) if the SIP 183 (Session Progress) was sent reliably and,
 - a) if the SIP PRACK request to the SIP 183 (Session Progress) response has been received by the participating MCVideo function and the SIP 200 (OK) response to the SIP PRACK request has been sent, shall send the SIP 200 (OK) response immediately;
 - b) if the SIP PRACK request to the SIP 183 (Session Progress) response has not yet been received, then upon receipt of the SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, according to 3GPP TS 24.229 [11], before sending the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function".

When the participating MCVideo function sends the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as described in the clause 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 clause 6.3.2.2.1;
- 3) shall copy the P-Asserted-Identity header field from the incoming SIP 200 (OK) response to the outgoing SIP 200 (OK) response;
- 4) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 5) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

The participating MCVideo function shall forward any other SIP response that does not contain SDP along the signalling path to the originating network according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.2.3.1.2]

"When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in clause 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."

[ETSI TS 124 281 [8] (3GPP 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 clause 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 clause and as specified in IETF RFC 5626 [35]."

[ETSI TS 124 581 [9] (3GPP 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.

When an MCVideo call is established a new instance of the transmission control server state machine for 'general reception 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 reception 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 rejoin 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 clause 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" fmt 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."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 6.3.3]

"When an MCVideo client leaves an MCVideo call and the MCVideo call remains ongoing with the other MCVideo clients, the transmission control server follows a two-step procedure.

- Step 1 The MCVideo server stops sending transmission control messages and RTP media packets to the MCVideo client leaving the MCVideo call and the MCVideo server discards transmission control messages and RTP media packets received from the MCVideo client leaving the MCVideo call.
- Step 2 When the application and signalling plane has determined that the MCVideo call with this transmission participant has been released, the corresponding instance of the transmission control server state machine for 'basic transmission control operation towards the transmission participant' and 'basic reception control operation towards the transmission participant' is released.

When an MCVideo call is released, the transmission control server follows a two-step procedure.

- Step 1 The MCVideo server stops sending transmission control messages and RTP media packets to all transmission participants in the MCVideo call.
- Step 2 When the application and signalling plane has determined that the MCVideo call has been released, the corresponding instance of the transmission control server state machine for 'general transmission control operation' and 'general reception control operation' are also terminated, along with any 'basic transmission control operation towards the transmission participant' and any 'basic reception control operation towards the transmission participant' state machines for the transmission participants of this call.

The transmission control server state machine for general transmission control operation initiates the MCVideo call release depending on the release policy specified in 3GPP TS 24.281 [2]."

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or
- iii. the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 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 clause 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 clause 10.2."

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or
 - ii. the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 14.2.3 in the latest received MBMS bearer listening status report, shall perform actions as specified in clause 10.2."

[ETSI TS 124 581 [9] (3GPP 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 clause 9.3.2; and

2. *in case of an on-demand session, shall release the media resources associated with the session."*

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 9.2.1]

"The transmission control messages are coded as described in clause 9.1.2 where the transmission control message is part of the application-dependent data.

For the transmission control protocol the ASCII name string is: MCVx (Mission Critical Video x) with x=0, 1 or 2 as specified in clause 9.1.2.

A list of transmission control messages can be found in clause 9.2.2.1.

The transmission control specific fields are specified in clause 9.2.3."

6.1.1.2.3 Test description

6.1.1.2.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) are affiliated to the Prearranged group.
- The IUT (MCVideo Server) is the controlling server of the Prearranged group.

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	Make the SS-UE1 (MCVideo Client) request the establishment of an emergency group call to SS-UE2 (MCVideo Client) with automatic commencement mode and implicit transmission control request.	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.1.3-1 to establish an emergency pre-arranged group call with automatic commencement mode and implicit transmission control request according to option b.ii of note in Annex A, Table A.3.1.3-1?	-	-	1	P
3	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	2	P
5	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
6	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	3	P

6.1.1.2.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.1.1.2.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.1.1.2.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with conditions GROUP-CALL and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

Table 6.1.1.2.3.3-2: SIP INVITE from the IUT (MCVideo Server) (Step 2, Table 6.1.1.2.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with conditions GROUP-CALL and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

Table 6.1.1.2.3.3-3: SIP 200 (OK) from the SS-UE2 (Step 2, Table 6.1.1.2.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-7, with conditions GROUP-CALL and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

Table 6.1.1.2.3.3-4: SIP 200 (OK) from the IUT (MCVideo Server) (Step 2, Table 6.1.1.2.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-9, with conditions GROUP-CALL and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

Table 6.1.1.2.3.3-5: Transmission Idle from the IUT (MCVideo Server)
(Step 4, Table 6.1.1.3.2-1; Steps 4 and 5, Annex A, Table A.3.8.3-1)

Derivation Path: Annex A, Table A.3.8.4-6 with condition EMERGENCY-CALL.

Table 6.1.1.2.3.3-6: Transmission Granted from the IUT (MCVideo Server)
(Step 2, Table 6.1.1.2.3.2-1; Step 2a1, Annex A, Table A.3.1.3-1)

Derivation Path: Annex A, Table A.3.1.4-11 (note), with condition EMERGENCY-CALL.

NOTE: Depends on server implementation.

Table 6.1.1.2.3.3-7: Media Transmission Notification from the IUT (MCVideo Server)
(Step 2, Table 6.1.1.2.3.2-1; Step 3a1, Annex A, Table A.3.1.3-1)

Derivation Path: Annex A, Table A.3.1.4-12 (note), with condition EMERGENCY-CALL.

NOTE: Depends on server implementation.

6.1.1.3 MCVideo Server - MCVideo Client / Pre-arranged Group Call / On-demand / Transmission Control State Transitions

6.1.1.3.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 and having registered the clients}
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates a pre-arranged group call with automatic commencement
mode and without transmission control }
    then { IUT (MCVideo Server) accepts the call from the initiator and establishes the call with
all affiliated users of the group }
}
```

(2)

```
with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the transmission control with low priority}
    then { IUT (MCVideo Server) sends transmission granted to the SS-UE1 (MCVideo client) and sends
media transmission notification to the SS-UE2 (MCVideo client) }
}
```

(3a)

```
with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions and Queueing is enabled }
ensure that {
  when { the SS-UE2 (MCVideo client) requests the transmission control with high priority }
    then { IUT (MCVideo Server) sends transmission queue position info to the SS-UE1 (MCVideo
client) }
}
```

(3b)

```
with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions and Queueing is not enabled }
ensure that {
  when { the SS-UE2 (MCVideo client) requests the transmission control with high priority }
    then { IUT (MCVideo Server) does not send transmission queue position info to the SS-UE1
(MCVideo client) }
}
```

(4)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions }
ensure that {
  when { the SS-UE1 (MCVideo client) requests to revoke media transmission}
  then { IUT (MCVideo Server) sends transmission deny to the SS-UE1 (MCVideo client) and sends
transmission end notify to the SS-UE2 (MCVideo client) }
}

```

(5)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions }
ensure that {
  when { the IUT (MCVideo Server) grants transmission to the SS-UE2 (MCVideo client) }
  then { IUT (MCVideo Server) sends transmission granted and media transmission notification to
the SS-UE2 (MCVideo client) ) }
}

```

(6)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions }
ensure that {
  when { the SS-UE2 (MCVideo client) requests the end of transmission control }
  then { IUT (MCVideo Server) IUT (MCVideo Server) sends transmission idle to the SS-UE1 (MCVideo
client) and sends transmission idle to the SS-UE2 (MCVideo client) }
}

```

(7)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions }
ensure that {
  when { the IUT (MCVideo Server) grants transmission with high priority to the SS-UE2 (MCVideo
client) }
  then { IUT (MCVideo Server) sends transmission granted to the SS-UE1 (MCVideo client) and sends
media transmission notification to the SS-UE2 (MCVideo client) }
}

```

(8a)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions and Queueing is enabled }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the transmission control with low priority}
  then { IUT (MCVideo Server) sends transmission queue position info to the SS-UE1 (MCVideo
client) }
}

```

(9a)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions and Queueing is enabled }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the end of transmission control }
  then { IUT (MCVideo Server) sends transmission control ack and transmission end response to the
SS-UE1 (MCVideo client) }
}

```

(10a)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions and Queueing is enabled }
ensure that {
  when { the SS-UE2 (MCVideo client) requests the transmission control with low priority}
  then { IUT (MCVideo Server) sends transmission queue position info to the SS-UE1 (MCVideo
client) }
}

```

(11a)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions and Queueing is enabled }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the end of transmission control }
  then { IUT (MCVideo Server) sends transmission end response to the SS-UE1 (MCVideo client) and
sends transmission end notify to the SS-UE2 (MCVideo client) }
}

```

(12a)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions and Queueing is enabled }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the transmission control }
  then { IUT (MCVideo Server) sends transmission granted to the SS-UE1 (MCVideo client) and sends
media transmission notification to the SS-UE2 (MCVideo client) }
}

```

(13a)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions and Queueing is enabled }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the end of transmission control }
  then { IUT (MCVideo Server) sends transmission idle to the SS-UE1 (MCVideo client) and sends
transmission idle to the SS-UE2 (MCVideo client) }
}

```

(8b)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions and Queueing is not enabled }
ensure that {
  when { IUT (MCVideo Server) requests the transmission control }
  then { IUT (MCVideo Server) sends transmission rejected to the SS-UE1 (MCVideo client) }
}

```

(14)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the transmission control }
  then { IUT (MCVideo Server) sends transmission granted to the SS-UE1 (MCVideo client) and sends
media transmission notification to the SS-UE2 (MCVideo client) }
}

```

(15)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions }
ensure that {
  when { the SS-UE1 (MCVideo client) requests to revoke media transmission}
  then { IUT (MCVideo Server) sends transmission deny to the SS-UE1 (MCVideo client) and sends
transmission idle to the SS-UE2 (MCVideo client) }
}

```

(16)

```

with { IUT (MCVideo Server) having established an MCVideo On-demand Pre-arranged Group Call with
Transmission Control State Transitions }
ensure that {
  when { the SS-UE1 (MCVideo client) ends the group call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the SS-UE2 (MCVideo Client) }
}

```

6.1.1.3.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 9.2.1.3.1.1, 9.2.1.3.2, 9.2.1.3.3.1, 9.2.1.4.1.1, 9.2.1.4.1.2, 9.2.1.4.2, 9.2.1.4.3, 6.3.2.2.5.2, 6.2.3.1.2, 6.2.3.1.1, and ETSI TS 124 581 [9] (3GPP TS 24.581), clauses 6.3.2.2, 6.3.3, 6.4.2, 6.4.3, 6.4.4, 9.2.1, 6.2.1, 6.2.2, 6.2.4. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.3.1.1]

"In the procedures in this clause:

- 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; and
- 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" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "prearranged", the participating MCVideo function:

...

- 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 shall 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 clause 7.3.

...

- 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 participating 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 clause 4.4. Otherwise, continue with the rest of the steps;

NOTE 3: If the SIP INVITE request contains an emergency indication or an imminent peril indication, the participating MCVideo function can by means beyond the scope of this specification choose to allow for an exception to the limit for the maximum simultaneous MCVideo sessions supported for the MCVideo user. Alternatively, a lower priority session of the MCVideo user could be terminated to allow for the new session.

- 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 clause 8.2.2.2.11 and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, shall perform the actions specified in clause 8.2.2.2.12 for implicit 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 release.

- 9) shall generate a SIP INVITE request as specified in clause 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 which was present in the incoming SIP INVITE request;
- 11) shall not copy the following header fields from the incoming SIP INVITE request to the outgoing SIP INVITE request, if they were present in the incoming SIP INVITE request:
 - a) Answer-Mode header field as specified in IETF RFC 5373 [27]; and

- b) Priv-Answer-Mode header field as specified in IETF RFC 5373 [27];
- 12) shall set the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;
- 13) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the MCVideo client as specified in clause 6.3.2.1.1.1;
- 14) if the received SIP INVITE request contains an application/vnd.3gpp.location-info+xml MIME body and 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;
- 15) 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 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field of the SIP INVITE request from the MCVideo client; and

NOTE 8: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

- 16) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11].

...

Upon receipt of a SIP 2xx response in response to the above SIP INVITE request in step 15), the participating MCVideo function:

- 1) if the received SIP 2xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;
- 2) shall generate a SIP 200 (OK) response as in clause 6.3.2.1.5.2;
- 3) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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) 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;
- 7) if the procedures of clause 8.2.2.2.12 for implicit affiliation were performed in the present clause, shall complete the implicit affiliation by performing the procedures of clause 8.2.2.2.13;
- 8) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];
- 9) shall interact with Media Plane as specified in 3GPP TS 24.581 [5]; and
- 10) shall start the SIP Session timer according to rules and procedures of IETF RFC 4028 [23].

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 clause 8.2.2.2.12 were invoked in this procedure, shall perform the procedures of clause 8.2.2.2.14;..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.3.2]

"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.*

NOTE 1: This clause covers on-demand session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

...

- 4) *shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;*

...

- 6) *if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;*
- 7) *shall perform the automatic commencement procedures specified in clause 6.3.2.2.5.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; and*
- 8) *shall perform the manual commencement procedures specified in clause 6.3.2.2.6.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "manual-answer".*

[ETSI TS 124 281 [8] (3GPP 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 clause 6.3.2.1.6."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.1.1]

"This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 9.2.1.4.2 or as the result of receiving a SIP 403 (Forbidden) response as described in this clause.

The controlling MCVideo function:

- 1) *shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;*
- 2) *shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited.;*

NOTE 1: How the controlling MCVideo function finds the address of the terminating MCVideo participating function is out of the scope of the current release.

NOTE 2: If the terminating MCVideo user is part of a partner MCVideo system, then the public service identity can identify an entry point in the partner network that is able to identify the terminating participating MCVideo function.

- 3) *shall set the P-Asserted-Identity header field to the public service identity of the controlling MCVideo function;*

- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:
 - a) the <mcvideo-request-uri> element set to the MCVideo ID of the terminating user; and
 - b) the <mcvideo-calling-group-id> element set to the group identity;

NOTE 3: The <mcvideo-calling-user-id> is already included in the MIME body as a result of calling clause 6.3.3.1.2 in step 1).

- 5) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;
- 6) if the in-progress emergency state of the group is set to a value of "true" the controlling MCVideo function:
 - a) shall include a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in clause 6.3.3.1.19;
 - b) if the received SIP INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true":
 - i) shall include in the outgoing SIP INVITE request in the application/vnd.3gpp.mcvideo-info+xml MIME body an <emergency-ind> element set to a value of "true"; and
 - ii) if the <alert-ind> element is set to "true" in the received SIP INVITE request and the requesting MCVideo user and MCVideo group are authorised for the initiation of MCVideo emergency alerts as determined by the procedures of clause 6.3.3.1.13.1, shall populate the application/vnd.3gpp.mcvideo-info+xml MIME body and the application/vnd.3gpp.location-info+xml MIME body as specified in clause 6.3.3.1.12. Otherwise, shall set the <alert-ind> element to a value of "false"; and
 - c) if the in-progress imminent peril state of the group is set to a value of "true" shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <imminentperil-ind> element set to a value of "false";
- 7) if the in-progress emergency state of the group is set to a value of "false" and the in-progress imminent peril state of the group is set to a value of "true", the controlling MCVideo function:
 - a) shall include a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in clause 6.3.3.1.19; and
 - b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true";
- 8) if:
 - a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and
 - b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

then:

- a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:
 - i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and
 - ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request; and
- 9) shall send the SIP INVITE request towards the terminating network in accordance with 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response containing a Require header field with the option tag "100rel" and containing a P-Answer-State header field with the value "Unconfirmed" in response to the SIP INVITE request the controlling MCVideo function:

- 1) shall send a SIP PRACK request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;
- 2) shall send a SIP NOTIFY request to all participants with a subscription to the conference event package as specified in clause 9.2.3.4; and
- 3) shall increment the local counter of the number of SIP 200 (OK) responses received from invited members, by 1.

NOTE 4: The notifications above could be sent prior to the SIP 200 (OK) response being sent to the inviting MCVideo client. These notifications received by MCVideo clients that are group members do not mean that the group session will be successfully established.

NOTE 5: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.1.2]

"The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;
- 2) shall set the Request-URI to the public service identity of the non-controlling MCVideo function serving the group identity of the MCVideo group owned by the partner MCVideo system;
- 3) shall set the P-Asserted-Identity to the public service identity of the controlling MCVideo function;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:
 - a) the <mcvideo-request-uri> element set to the group identity of the MCVideo group hosted by the non-controlling MCVideo function in the partner MCVideo system; and
 - b) the <mcvideo-calling-group-id> element set to the group identity of the group served by the controlling MCVideo function;
- 5) shall include the Recv-Info header field set to g.3gpp.mcvideo-transmission-request;
- 6) if:
 - a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and
 - b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

then:

- a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:
 - i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and
 - ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request;
- 7) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1; and

- 8) shall send the SIP INVITE request towards the partner MCVideo system in accordance with 3GPP TS 24.229 [11].

...

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and

NOTE 3: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2.

- 2) if at least one of the invited MCVideo clients has subscribed to the conference package, shall subscribe to the conference event package in the non-controlling MCVideo function as specified in clause 9.2.3.4.3."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.2]

"In the procedures in this clause:

- 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) indication of required group members in a SIP 183 (Session Progress) response refers to the <required> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to "true" in a SIP 183 (Session Progress) sent by the non-controlling MCVideo function of an MCVideo group;
- 5) 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
- 6) 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 controlling MCVideo function of an MCVideo group", the controlling MCVideo function:

...

- 4) if received SIP 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 clause 6.3.3.1.17;
- 5) 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 clause 6.3.5.2;

...

- 7) shall perform the actions as described in clause 6.3.3.2.2;
- 8) shall maintain a local counter of the number of SIP 200 (OK) responses received from invited members and shall initialise this local counter to zero;
- 9) shall determine if an MCVideo group call for the group identity is already ongoing by determining if an MCVideo session identity has already been allocated for the group call and the MCVideo session is active;

...

- 13) if the MCVideo group call is not ongoing then:

...

- c) if the received SIP INVITE request contains an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined as determined in step 13) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;
- d) 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];
- e) shall create a prearranged group session and allocate an MCVideo session identity for the prearranged group call, and shall handle timer TNG3 (group call timer) as specified in clause 6.3.3.5;
- f) if the group identity in the "SIP INVITE request for controlling MCVideo function of an MCVideo group" is a TGI:
 - i) shall for each of the constituent MCVideo groups homed on the primary MCVideo system:
 - A) if the controlling MCVideo function does not own the MCVideo group identified by the MCVideo group ID, then generate a SIP INVITE request towards the MCVideo server that owns the MCVideo group identity by following the procedures in clause 9.2.1.4.1.2; and

NOTE 2: The MCVideo server that the SIP INVITE request is sent to acts as a non-controlling MCVideo function;

- B) if the controlling MCVideo function owns the MCVideo group identified by the MCVideo group ID then:
 - I) determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;
 - II) invite each group member determined in step A) above, to the group session, as specified in clause 9.2.1.4.1.1; and
 - III) interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and
- ii) shall for each of the constituent MCVideo groups homed on the partner MCVideo system generate a SIP INVITE request for the MCVideo group identity homed on the partner MCVideo system as specified in clause 9.2.1.4.1.2; and
- g) if the group identity in the SIP INVITE request for controlling MCVideo function of an MCVideo group is an MCVideo group ID:
 - i) shall determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;
 - ii) if necessary, shall start timer TNG1 (acknowledged call setup timer) according to the conditions stated in clause 6.3.3.3;
 - iii) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":
 - A) shall cache the information that this MCVideo user has initiated an MCVideo emergency call;
 - B) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall 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"; and
 - II) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in clause 6.3.3.1.16;

- iv) *if the in-progress emergency state of the group is set to a value of "false" and if the received SIP INVITE request contains an imminent peril indication set to a value of "true", the controlling MCVideo function shall:*
 - A) *shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and*
 - B) *if the in-progress imminent peril state of the group is set to a value of "false", shall set the in-progress imminent peril state of the group to a value of "true";*
 - v) *shall invite each group member determined in step 13)g)i) above, to the group session, as specified in clause 9.2.1.4.1.1; and*
 - vi) *shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and*
- 14) *if the MCVideo group call is ongoing then:*
- ...
- c) *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];*
- ...
- e) *if the received SIP INVITE request contains an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined in step 14) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;*
 - f) *if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":*
 - i) *shall cache the information that this MCVideo user 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 authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall cache the information that this MCVideo user has initiated an MCVideo emergency alert;*
 - iii) *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 clause 6.3.3.1.16; and*
 - C) *shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.6;*
 - iv) *if the in-progress imminent peril 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 imminent peril indication as specified in clause 6.3.3.1.11, setting 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*
 - v) *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];*

- g) 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", the controlling MCVideo function:
 - i) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
 - ii) if the in-progress imminent peril state of the group is set to a value of "false":
 - A) shall set the in-progress imminent peril state of the group to a value of "true";
 - B) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.15; and
 - C) 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
 - iii) if the in-progress imminent peril 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 imminent peril indication as specified in clause 6.3.3.1.11, setting 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];
- h) shall generate a SIP 200 (OK) response as specified in the clause 6.3.3.2.4.2;
- i) 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 clause 6.3.3.2.1;
- j) shall include in the SIP 200 (OK) response with the warning text set to "123 MCVideo session already exists" as specified in clause 4.4;
- k) if the received SIP re-INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- l) 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" 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 clause 4.4;

NOTE 4: 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.

- m) shall interact with media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 5: Resulting media plane processing is completed before the next step is performed.

- n) shall send the SIP 200 (OK) response towards the inviting MCVideo client or inviting non-controlling MCVideo function according to 3GPP TS 24.229 [11];
- o) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4;

NOTE 6: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- p) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11];

- q) Upon receiving a SIP ACK to the above SIP 200 (OK) response and the SIP 200 (OK) response contained a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall follow the procedures in clause 6.3.3.1.18; and
- r) shall not continue with the rest of the clause.

Upon receiving a SIP 183 (Session Progress) response to the SIP INVITE request specified in clause 9.2.1.4.1 containing a P-Answer-State header field with the value "Unconfirmed" as specified in IETF RFC 4964 [30], the timer TNG1 (acknowledged call setup timer) is not running, the controlling MCVideo function supports media buffering and the SIP final response is not yet sent to the inviting MCVideo client:

- 1) shall generate a SIP 200 (OK) response to SIP INVITE request as specified in the clause 6.3.3.2.3.2;
- ...
- 3) 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 clause 6.3.3.2.1;
- 4) shall include a P-Answer-State header field with the value "Unconfirmed";
- 5) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- 6) 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 clause 4.4;
- 7) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 7: Resulting user plane processing is completed before the next step is performed.

- 8) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 9) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 8: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 10) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response for a SIP INVITE request as specified in clause 9.2.1.4.1.2 containing an indication of required group members, the timer TNG1 (acknowledged call setup timer) is running and all SIP 200 (OK) responses have been received to all SIP INVITE requests sent to MCVideo clients specified in clause 9.2.1.4.1.1, then the controlling MCVideo function shall wait until the SIP 200 (OK) response has been received to the SIP INVITE request specified in clause 9.2.1.4.1.2 before generating a SIP 200 (OK) response to the "SIP INVITE request for controlling MCVideo function of an MCVideo group".

Upon receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1 that was sent to an affiliated and <on-network-required> group member as specified in 3GPP TS 24.481 [24]; and

- 1) if the MCVideo ID in the SIP 200 (OK) response matches to the MCVideo ID in the corresponding SIP INVITE request;
- 2) there are no outstanding SIP 200 (OK) responses to SIP INVITE requests which were sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24]; and
- 3) there is no outstanding SIP 200 (OK) response to a SIP INVITE request sent in clause 9.2.1.4.1.2 where the SIP 183 (Session Progress) response contained an indication of required group members;

the controlling MCVideo function:

- 1) shall stop timer TNG1 (acknowledged call setup timer) as described in clause 6.3.3.3;
- 2) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;
- ...
- 4) 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 clause 6.3.3.2.1;
- 5) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 9: Resulting media plane processing is completed before the next step is performed.

- 6) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 7) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 10: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 8) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon:

- 1) receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1;
- 2) the timer TNG1 (acknowledged call setup timer) is not running;
- 3) the local counter of the number of SIP 200 (OK) responses received from invited members is equal to the value of the <on-network-minimum-number-to-start> element of the group document;
- 4) the controlling MCVideo function supports media buffering; and
- 5) the SIP final response has not yet been sent to the inviting MCVideo client;

the controlling MCVideo function according to local policy:

- 1) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.2;
- ...
- 3) 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 clause 6.3.3.2.1;
- 4) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- 5) 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 clause 4.4;
- 6) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 11: Resulting media plane processing is completed before the next step is performed.

- 7) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];

- 8) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 12: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 9) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon expiry of timer TNG1 (acknowledged call setup timer), if there are outstanding SIP 200 (OK) responses to SIP INVITE requests sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24], the controlling MCVideo function shall follow the procedures specified in clause 6.3.3.3.

...

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 clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.3]

"Upon receiving a SIP BYE request the controlling MCVideo function shall follow the procedures as specified in clause 6.3.3.2.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.3.2.2.5.2]

"When receiving a "SIP INVITE request for terminating participating MCVideo function" for an on-demand session that requires automatic commencement mode the participating MCVideo function:

- 1) if:
 - a) the incoming SIP INVITE request contained a Priv-Answer-Mode header field set to the value of "Auto";
 - b) no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; or
 - c) the incoming SIP INVITE request contained an Answer-Mode header field set to "Auto" and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer";

then:

- a) shall generate a SIP 183 (Session Progress) response to the "SIP INVITE request for terminating participating MCVideo function" as specified in clause 6.3.2.2.4.1; and

NOTE: The SIP 183 (session Progress) response can be sent reliably or unreliably depending on the content of the received SIP INVITE request. Regardless of if the SIP 183 (Session Progress) response is sent reliably or unreliably, SDP is not included in the SIP 183 (Session Progress) response.

- b) shall set the P-Answer-State header field to "Unconfirmed" in the SIP 183 (Session Progress) response;
- 2) shall copy the public user identity contained in the Request-URI of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the SIP 183 (Session Progress) response;
- 3) shall generate a SIP INVITE request as specified in clause 6.3.2.2.3;
- 4) shall set the Request-URI to the public user identity associated to the MCVideo ID of the MCVideo user to be invited;
- 5) shall perform the procedures specified in clause 6.3.2.2.9 to include any MIME bodies in the received SIP INVITE request, into the outgoing SIP INVITE request;

- 6) 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;
- 7) if the Priv-Answer-Mode header field is present in the incoming SIP INVITE request with a value of "Auto", shall include a Priv-Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request. Otherwise, if the Answer-Mode header field is present in the incoming SIP INVITE request, the participating MCVideo function shall include an Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request;
- 8) if no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer", shall set the Answer-Mode header field to "Auto" in the outgoing SIP INVITE request;
- 9) 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 clause 6.3.2.2.1;
- 10) 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; and
- 11) shall send the SIP INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

If the SIP 183 (Session Progress) response was sent reliably, then upon receiving a SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, 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) if the SIP 183 (Session Progress) was sent unreliably, shall send the SIP 200 (OK) response immediately; and
- 2) if the SIP 183 (Session Progress) was sent reliably and,
 - a) if the SIP PRACK request to the SIP 183 (Session Progress) response has been received by the participating MCVideo function and the SIP 200 (OK) response to the SIP PRACK request has been sent, shall send the SIP 200 (OK) response immediately;
 - b) if the SIP PRACK request to the SIP 183 (Session Progress) response has not yet been received, then upon receipt of the SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, according to 3GPP TS 24.229 [11], before sending the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function".

When the participating MCVideo function sends the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as described in the clause 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 clause 6.3.2.2.2.1;
- 3) shall copy the P-Asserted-Identity header field from the incoming SIP 200 (OK) response to the outgoing SIP 200 (OK) response;
- 4) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 5) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

The participating MCVideo function shall forward any other SIP response that does not contain SDP along the signalling path to the originating network according to 3GPP TS 24.229 [11].

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.2.3.1.2]

When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in clause 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."

[ETSI TS 124 281 [8] (3GPP 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 clause 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 clause and as specified in IETF RFC 5626 [35]."

[ETSI TS 124 581 [9] (3GPP 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.

When an MCVideo call is established a new instance of the transmission control server state machine for 'general reception 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 reception 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 rejoin 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 clause 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" fntp 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."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 6.3.3]

"When an MCVideo client leaves an MCVideo call and the MCVideo call remains ongoing with the other MCVideo clients, the transmission control server follows a two-step procedure.

- Step 1 The MCVideo server stops sending transmission control messages and RTP media packets to the MCVideo client leaving the MCVideo call and the MCVideo server discards transmission control messages and RTP media packets received from the MCVideo client leaving the MCVideo call.
- Step 2 When the application and signalling plane has determined that the MCVideo call with this transmission participant has been released, the corresponding instance of the transmission control server state machine for 'basic transmission control operation towards the transmission participant' and 'basic reception control operation towards the transmission participant' is released.

When an MCVideo call is released, the transmission control server follows a two-step procedure.

- Step 1 The MCVideo server stops sending transmission control messages and RTP media packets to all transmission participants in the MCVideo call.

- Step 2 *When the application and signalling plane has determined that the MCVideo call has been released, the corresponding instance of the transmission control server state machine for 'general transmission control operation' and 'general reception control operation' are also terminated, along with any 'basic transmission control operation towards the transmission participant' and any 'basic reception control operation towards the transmission participant' state machines for the transmission participants of this call.*

The transmission control server state machine for general transmission control operation initiates the MCVideo call release depending on the release policy specified in 3GPP TS 24.281 [2]."

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or*
 - iii. *the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 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 clause 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 clause 10.2."*

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or*
 - ii. *the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 14.2.3 in the latest received MBMS bearer listening status report, shall perform actions as specified in clause 10.2."*

[ETSI TS 124 581 [9] (3GPP 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 clause 9.3.2; and*
2. *in case of an on-demand session, shall release the media resources associated with the session."*

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 9.2.1]

"The transmission control messages are coded as described in clause 9.1.2 where the transmission control message is part of the application-dependent data.

For the transmission control protocol the ASCII name string is: MCVx (Mission Critical Video x) with x=0, 1 or 2 as specified in clause 9.1.2.

A list of transmission control messages can be found in clause 9.2.2.1.

The transmission control specific fields are specified in clause 9.2.3."

[ETSI TS 124 581 [9] (3GPP 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 clause 6.2.4 and a new instance of the 'Transmission participant state transition diagram for basic reception control operation' as specified in clause 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."*

[ETSI TS 124 581 [9] (3GPP 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	<i>The transmission participant stops sending transmission control and reception control messages and the MCVideo client stops sending and receiving RTP media packets.</i>
Step 2	<i>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 clause 6.2.4 and the corresponding instance of the 'Transmission participant state transition diagram for basic reception control operation' as specified in clause 6.2.5 are terminated and the transmission participant releases all the used resources.</i>

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

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 6.2.4]

"The transmission participant shall behave according to the state diagram and the state transitions specified in this clause.

Figure 6.2.4.1-1 shows the state diagram for 'Transmission participant state transition diagram for basic transmission control operation'.

..."

6.1.1.3.3 Test description

6.1.1.3.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) are affiliated to the Prearranged group.
- The IUT (MCVideo Server) is the controlling server of the Prearranged group.

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 SS-UE1 (MCVideo Client) request the establishment of a pre-arranged group call to SS-UE2 (MCVideo Client) with automatic commencement mode and without transmission request.	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.1.3-1 to establish a pre-arranged group call with automatic commencement mode and without transmission control request according to option a of note in Annex A, Table A.3.1.3-1?	-	-	1	P
3	Make the SS-UE1 (MCVideo Client) request transmission with low priority.	-	-	-	-
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1 for SS-UE1 (MCVideo Client)?	-	-	2	P
5	Make the SS-UE2 (MCVideo Client) request transmission with high priority.	-	-	-	-
-	EXCEPTION: Steps 6a - 6b describe behaviour that depends on pc_MCVideo_TransmissionRequestQueueing.	-	-	-	-
-	IF pc_MCVideo_TransmissionRequestQueueing THEN:	-	-	-	-
6a	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Queue Position Info' as described in Annex A, Table A.3.12.3-1 for SS-UE2 (MCVideo Client)?	-	-	3a	P
-	ELSE:	-	-	-	-
6b	Check: Does the IUT (MCVideo Server) correctly perform steps 1-2 of procedure 'MCVideo Transmission Request - Queue Position Info' as described in Annex A, Table A.3.12.3-1 for SS-UE2 (MCVideo Client)?	-	-	3b	P
7	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Revoked - Transmission End Request' as described in Annex A, Table A.3.14.3-1, to revoke SS-UE1 (MCVideo Client) media transmission, with revoke reason #4 (Media Burst pre-empted)?	-	-	4	P
8	Check: Does the IUT (MCVideo Server) send a Transmission End Notify message to SS-UE2 (MCVideo Client) informing that SS-UE1 (MCVideo Client) has stopped to transmit?	<--	Transmission End Notify	4	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
9	IF the IUT (MCVideo Server) requests acknowledgement, the SS-UE2 (MCVideo Client) sends a Transmission Control Ack message in response to the Transmission End Notify message.	-->	Transmission Control Ack	-	-
10	Check: Does the IUT (MCVideo Server) correctly perform steps 3a1-3b2 of procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1 to grant the transmission to SS-UE2 (MCVideo Client)?	-	-	5	P
11	Make the SS-UE2 (MCVideo Client) request end of transmission.	-	-	-	-
12	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1 for SS-UE2 (MCVideo Client)?	-	-	6	P
13	Make the SS-UE2 (MCVideo Client) request transmission with high priority.	-	-	-	-
14	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1 for SS-UE2 (MCVideo Client)?	-	-	7	P
15	Make the SS-UE1 (MCVideo Client) request transmission with low priority.	-	-	-	-
-	EXCEPTION: Steps 16a1 - 16b1 describe behaviour that depends on pc_MCVideo_TransmissionRequestQueueing.	-	-	-	-
-	IF pc_MCVideo_TransmissionRequestQueueing THEN:	-	-	-	-
16a1	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Queue Position Info' as described in Annex A, Table A.3.12.3-1 for SS-UE1 (MCVideo Client)?	-	-	8a	P
16a2	Make the SS-UE1 (MCVideo Client) request queue position.	-	-	-	-
16a3	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Queue Position Request - Queue Position Info', as described in Annex A, Table A.3.13.3-1 for SS-UE1 (MCVideo Client)?	-	-	8a	P
16a4	Make the SS-UE1 (MCVideo Client) cancel queued transmission.	-	-	-	-
16a5	The SS-UE1 (MCVideo Client) sends a Transmission End Request message, with acknowledgement, to cancel queued transmission.	-->	Transmission End Request	-	-
16a6	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	9a	P
16a7	Check: Does the IUT (MCVideo Server) send a Transmission End Response message to SS-UE1 (MCVideo Client)?	<--	Transmission End Response	9a	P
16a8	IF the IUT (MCVideo Server) requests acknowledgement, the SS-UE1 (MCVideo Client) sends a Transmission Control Ack message in response to the Transmission End Response message.	-->	Transmission Control Ack	-	-
16a9	Make the SS-UE1 (MCVideo Client) request transmission with low priority.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
16a10	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Queue Position Info' as described in Annex A, Table A.3.12.3-1 for SS-UE1 (MCVideo Client)?	-	-	10a	P
16a11	Make the SS-UE2 (MCVideo Client) request end of transmission.	-	-	-	-
16a12	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify', except steps 3a5-3a8 and 3b3-3b4, as described in Annex A, Table A.3.8.3-1?	-	-	11a	P
16a13	Check: Does the IUT (MCVideo Server) correctly perform steps 3a1-3b2 of procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1 to grant transmission to SS-UE1 (MCVideo Client)?	-	-	12a	P
16a14	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
16a15	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	13a	P
-	ELSE:	-	-	-	-
16b1	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Rejected' as described in Annex A, Table A.3.11.3-1 for SS-UE1 (MCVideo Client)?	-	-	8b	P
17	Make the SS-UE1 (MCVideo Client) request transmission and transmit media until transmission timer expires.	-	-	-	-
18	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1 for SS-UE1 (MCVideo Client)?	-	-	14	P
19	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Revoked - Transmission End Request' as described in Annex A, Table A.3.14.3-1, to revoke SS-UE1 (MCVideo Client) media transmission, with revoke reason #2 (Media Burst too long)?	-	-	15	P
20	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1, except steps 1-3a2 and 3b1, to inform SS-UE2 (MCVideo Client) that SS-UE1 (MCVideo Client) transmission has ended?	-	-	15	P
21	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
22	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	16	P

6.1.1.3.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.1.1.3.3.3-1: SIP INVITE from the SS-UE1 (MCVideo Client)
(Step 2, Table 6.1.1.3.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.3.3.3-2: SIP INVITE from the IUT (MCVideo Server)
(Step 2, Table 6.1.1.3.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.3.3.3-3: SIP 200 (OK) from the SS-UE2 (MCVideo Client)
(Step 2, Table 6.1.1.3.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-7, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.3.3.3-4: SIP 200 (OK) from the IUT (MCVideo Server)
(Step 2, Table 6.1.1.3.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-9, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.3.3.3-5: Transmission Request from the SS-UE1 (MCVideo Client)
(Steps 4, 16a1, 16a10 and 16b1, Table 6.1.1.3.3.2-1; Step 1, Annex A, Table A.3.7.3-1;
Step 1, Annex A, Table A.3.11.3-1; Step 1, Annex A, Table A.3.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.1.1-1, with condition ACK				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Priority			ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.2	
Transmission Priority Value	"5"			

Table 6.1.1.3.3.3-6: Transmission Granted from the IUT (MCVideo Server)
(Steps 4 and 16a13, Table 6.1.1.3.3.2-1; Steps 3b1 and 3a1, Annex A, Table A.3.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.1-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Priority			ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.2	
Transmission Priority Value	"5"			

Table 6.1.1.3.3.3-7: Transmission Request from the SS-UE2 (MCVideo Client)
(Steps 6a, 6b and 14, Table 6.1.1.3.3.2-1; Step 1, Annex A, Table A.3.7.3-1;
Step 1, Annex A, Table A.3.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.1.1-1, with condition ACK				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Priority			ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.2	
Transmission Priority Value	"15"			

Table 6.1.1.3.3.3-8: Queue Position Info from the IUT (MCVideo Server)
(Steps 6a and 6b, Table 6.1.1.3.3.2-1; Steps 3a1 and 3b1, Annex A, Table A.3.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.6-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.				
Information Element	Value/remark	Comment	Reference	Condition
Queue Info		Defines the queue position and granted transmission control priority in the queue.	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.5	
Queue Priority Level	"15"		ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.2	

Table 6.1.1.3.3.3-9: Transmission Revoked from the IUT (MCVideo Server)
(Step 7, Table 6.1.1.3.3.2-1; Steps 1aA and 1aB, Annex A, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.2-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.				
Information Element	Value/remark	Comment	Reference	Condition
Reject Cause			ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.4	
Reject Cause Value	4		ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.10.2	
Reject Cause Phrase	"Media Burst pre-empted"	A text string encoded the text string in the SDES item CNAME.	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.10.2	

Table 6.1.1.3.3.3-10: Transmission End Request from the IUT (MCVideo Server)
(Step 7, Table 6.1.1.3.3.2-1; Steps 1bA and 1bB, Annex A, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.1-1, with condition DOWNLINK. With condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.				
Information Element	Value/remark	Comment	Reference	Condition
Reject Cause			ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.4	
Reject Cause Value	4		ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.10.2	
Reject Cause Phrase	"Media Burst pre-empted"	A text string encoded the text string in the SDES item CNAME.	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.10.2	

Table 6.1.1.3.3.3-11: Transmission End Notify from the IUT (MCVideo Server)
(Step 8, Table 6.1.1.3.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.15-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.				
Information Element	Value/remark	Comment	Reference	Condition
User Id of the Transmitting User		Carries the identity of the user whose media transmission has been released	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.6	
User Id of the Transmitting User	px_MCVideo_ID_User_A			
Audio SSRC of the Transmitting User	Media/Audio SSRC of remote client (Client A)	SSRC of the user transmitting the media	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.16	

Table 6.1.1.3.3.3-12: Transmission Control Ack from the SS-UE1 (MCVideo Client)
(Step 9, Table 6.1.1.3.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table 6.1.1.3.3.3-13: Transmission Granted from the IUT (MCVideo Server)
(Steps 10 and 14, Table 6.1.1.3.3.2-1; Steps 3a1 and 3b1, Annex A, Table A.3.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.1-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Priority			ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.2	
Transmission Priority Value	"15"			

Table 6.1.1.3.3.3-14: Media Transmission Notification from the IUT (MCVideo Server)
(Steps 10 and 14, Table 6.1.1.3.3.2-1; Steps 3a3 and 3b2, Annex A, Table A.3.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.7-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Table 6.1.1.3.3.3-15: Transmission End Request from the SS-UE2 (MCVideo Client)
(Steps 12 and 16a12, Table 6.1.1.3.3.2-1; Step 1, Annex A, Table A.3.8.3-1)

Derivation Path: Annex A, Table A.3.8.4-1				
Information Element	Value/remark	Comment	Reference	Condition
User Id of the Transmitting User		identity of the user whose media transmission is requested to be terminated.	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.6	
User Id of the Transmitting User	px MCVideo ID User B			

Table 6.1.1.3.3.3-16: Transmission End Notify from the IUT (MCVideo Server)
(Steps 12 and 16a12, Table 6.1.1.3.3.2-1; Steps 3a3 and 3b2, Annex A, Table A.3.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.15-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Table 6.1.1.3.3.3-17: Queue Position Info from the IUT (MCVideo Server)
(Steps 16a1, 16a3 and 16a10, Table 6.1.1.3.3.2-1; Steps 3a1 and 3b1, Annex A, Table A.3.12.3-1;
Steps 3a1 and 3b1, Annex A, Table A.3.13.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.6-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.				
Information Element	Value/remark	Comment	Reference	Condition
Queue Info		Defines the queue position and granted transmission control priority in the queue.	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.5	
Queue Priority Level	"5"		ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.2	

Table 6.1.1.3.3.3-18: Transmission End Request from the SS-UE1 (MCVideo Client)
(Step 16a5, Table 6.1.1.3.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.1-1, with conditions ACK and UPLINK.

Table 6.1.1.3.3.3-19: Transmission Control Ack from the IUT (MCVideo Server)
(Steps 16a6, Table 6.1.1.3.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, with condition DOWNLINK.

Table 6.1.1.3.3.3-20: Transmission End Response from the IUT (MCVideo Server)
(Step 16a7, Table 6.1.1.3.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.2-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Table 6.1.1.3.3.3-21: Transmission Control Ack from the SS-UE1 (MCVideo Client)
(Steps 16a8, Table 6.1.1.3.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, with condition UPLINK.

Table 6.1.1.3.3.3-22: Transmission Revoked from the IUT (MCVideo Server)
(Step 19, Table 6.1.1.3.3.2-1; Steps 1aA and 1aB, Annex A, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.2-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Information Element	Value/remark	Comment	Reference	Condition
Reject Cause			ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.4	
Reject Cause Value	2		ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.10.2	
Reject Cause Phrase	"Media burst too long"	A text string encoded the text string in the SDES item CNAME.	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.10.2	

Table 6.1.1.3.3.3-23: Transmission End Request from the IUT (MCVideo Server)
(Step 19, Table 6.1.1.3.3.2-1; Steps 1bA and 1bB, Annex A, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.1-1, with condition DOWNLINK. With condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Information Element	Value/remark	Comment	Reference	Condition
Reject Cause			ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.4	
Reject Cause Value	2		ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.10.2	
Reject Cause Phrase	"Media burst too long"	A text string encoded the text string in the SDES item CNAME.	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.10.2	

6.1.1.4 MCVideo Server - MCVideo Client / Pre-arranged Group Call / On-demand / Reception Control State Transitions

6.1.1.4.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 and having registered the clients}
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates a pre-arranged group call with automatic commencement
mode and implicit transmission control }
  then { IUT (MCVideo Server) accepts the call from the initiator and establishes the call with
all affiliated users of the group and sends transmission granted to the SS-UE1 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having established pre-arranged group call with automatic commencement
mode }
ensure that {
  when { the SS-UE2 (MCVideo client) requests the media reception from the SS-UE1 (MCVideo client) }
  then { IUT (MCVideo Server) sends transmission control ack and receive media response }
}
```

(3)

```
with { IUT (MCVideo Server) having established pre-arranged group call with automatic commencement
mode }
ensure that {
  when { the SS-UE2 (MCVideo client) requests end of media reception }
  then { IUT (MCVideo Server) sends transmission control ack and media reception end response }
}
```

(4)

```
with { IUT (MCVideo Server) having established pre-arranged group call with automatic commencement
mode }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the end of transmission control}
  then { IUT (MCVideo Server) sends transmission idle to the SS-UE1 (MCVideo client) and sends
transmission idle to the SS-UE2 (MCVideo client) }
}
```

(5)

```
with { IUT (MCVideo Server) having established pre-arranged group call with automatic commencement
mode }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the transmission control }
  then { IUT (MCVideo Server) sends transmission granted to the SS-UE1 (MCVideo client) and sends
media transmission notification to the SS-UE2 (MCVideo client) }
}
```

(6)

```
with { IUT (MCVideo Server) having established pre-arranged group call with automatic commencement
mode }
ensure that {
  when { the SS-UE1 (MCVideo client) ends the group call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the SS-UE2 (MCVideo Client) }
}
```

6.1.1.4.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 9.2.1.3.1.1, 9.2.1.3.2, 9.2.1.3.3.1, 9.2.1.4.1.1, 9.2.1.4.1.2, 9.2.1.4.2, 9.2.1.4.3, 6.3.2.2.5.2, 6.2.3.1.2, 6.2.3.1.1, and ETSI TS 124 581 [9] (3GPP TS 24.581), clauses 6.3.2.2, 6.3.3, 6.4.2, 6.4.3, 6.4.4, 9.2.1, 6.2.1, 6.2.2, 6.2.5. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.3.1.1]

"In the procedures in this clause:

- 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; and
- 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" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "prearranged", the participating MCVideo function:

...

- 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 shall 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 clause 7.3.

...

- 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 participating 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 clause 4.4. Otherwise, continue with the rest of the steps;

NOTE 3: If the SIP INVITE request contains an emergency indication or an imminent peril indication, the participating MCVideo function can by means beyond the scope of this specification choose to allow for an exception to the limit for the maximum simultaneous MCVideo sessions supported for the MCVideo user. Alternatively, a lower priority session of the MCVideo user could be terminated to allow for the new session.

- 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 clause 8.2.2.2.11 and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, shall perform the actions specified in clause 8.2.2.2.12 for implicit 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 release.

- 9) shall generate a SIP INVITE request as specified in clause 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 which was present in the incoming SIP INVITE request;
- 11) shall not copy the following header fields from the incoming SIP INVITE request to the outgoing SIP INVITE request, if they were present in the incoming SIP INVITE request:
 - a) Answer-Mode header field as specified in IETF RFC 5373 [27]; and

- b) Priv-Answer-Mode header field as specified in IETF RFC 5373 [27];
- 12) shall set the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;
- 13) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the MCVideo client as specified in clause 6.3.2.1.1.1;
- 14) if the received SIP INVITE request contains an application/vnd.3gpp.location-info+xml MIME body and 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;
- 15) 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 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field of the SIP INVITE request from the MCVideo client; and

NOTE 8: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

- 16) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11].

...

Upon receipt of a SIP 2xx response in response to the above SIP INVITE request in step 15), the participating MCVideo function:

- 1) if the received SIP 2xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;
- 2) shall generate a SIP 200 (OK) response as in clause 6.3.2.1.5.2;
- 3) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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) 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;
- 7) if the procedures of clause 8.2.2.2.12 for implicit affiliation were performed in the present clause, shall complete the implicit affiliation by performing the procedures of clause 8.2.2.2.13;
- 8) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];
- 9) shall interact with Media Plane as specified in 3GPP TS 24.581 [5]; and
- 10) shall start the SIP Session timer according to rules and procedures of IETF RFC 4028 [23].

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 clause 8.2.2.2.12 were invoked in this procedure, shall perform the procedures of clause 8.2.2.2.14;..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.3.2]

"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.*

NOTE 1: This clause covers on-demand session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

...

- 4) *shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;*

...

- 6) *if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;*
- 7) *shall perform the automatic commencement procedures specified in clause 6.3.2.2.5.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; and*
- 8) *shall perform the manual commencement procedures specified in clause 6.3.2.2.6.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "manual-answer".*

[ETSI TS 124 281 [8] (3GPP 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 clause 6.3.2.1.6."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.1.1]

"This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 9.2.1.4.2 or as the result of receiving a SIP 403 (Forbidden) response as described in this clause.

The controlling MCVideo function:

- 1) *shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;*
- 2) *shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited.;*

NOTE 1: How the controlling MCVideo function finds the address of the terminating MCVideo participating function is out of the scope of the current release.

NOTE 2: If the terminating MCVideo user is part of a partner MCVideo system, then the public service identity can identify an entry point in the partner network that is able to identify the terminating participating MCVideo function.

- 3) *shall set the P-Asserted-Identity header field to the public service identity of the controlling MCVideo function;*

- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:
 - a) the <mcvideo-request-uri> element set to the MCVideo ID of the terminating user; and
 - b) the <mcvideo-calling-group-id> element set to the group identity;

NOTE 3: The <mcvideo-calling-user-id> is already included in the MIME body as a result of calling clause 6.3.3.1.2 in step 1).

- 5) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;
- 6) if the in-progress emergency state of the group is set to a value of "true" the controlling MCVideo function:
 - a) shall include a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in clause 6.3.3.1.19;
 - b) if the received SIP INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true":
 - i) shall include in the outgoing SIP INVITE request in the application/vnd.3gpp.mcvideo-info+xml MIME body an <emergency-ind> element set to a value of "true"; and
 - ii) if the <alert-ind> element is set to "true" in the received SIP INVITE request and the requesting MCVideo user and MCVideo group are authorised for the initiation of MCVideo emergency alerts as determined by the procedures of clause 6.3.3.1.13.1, shall populate the application/vnd.3gpp.mcvideo-info+xml MIME body and the application/vnd.3gpp.location-info+xml MIME body as specified in clause 6.3.3.1.12. Otherwise, shall set the <alert-ind> element to a value of "false"; and
 - c) if the in-progress imminent peril state of the group is set to a value of "true" shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <imminentperil-ind> element set to a value of "false";
- 7) if the in-progress emergency state of the group is set to a value of "false" and the in-progress imminent peril state of the group is set to a value of "true", the controlling MCVideo function:
 - a) shall include a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in clause 6.3.3.1.19; and
 - b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true";
- 8) if:
 - a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and
 - b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

then:

- a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:
 - i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and
 - ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request; and
- 9) shall send the SIP INVITE request towards the terminating network in accordance with 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response containing a Require header field with the option tag "100rel" and containing a P-Answer-State header field with the value "Unconfirmed" in response to the SIP INVITE request the controlling MCVideo function:

- 1) shall send a SIP PRACK request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;
- 2) shall send a SIP NOTIFY request to all participants with a subscription to the conference event package as specified in clause 9.2.3.4; and
- 3) shall increment the local counter of the number of SIP 200 (OK) responses received from invited members, by 1.

NOTE 4: The notifications above could be sent prior to the SIP 200 (OK) response being sent to the inviting MCVideo client. These notifications received by MCVideo clients that are group members do not mean that the group session will be successfully established.

NOTE 5: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.1.2]

"The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;
- 2) shall set the Request-URI to the public service identity of the non-controlling MCVideo function serving the group identity of the MCVideo group owned by the partner MCVideo system;
- 3) shall set the P-Asserted-Identity to the public service identity of the controlling MCVideo function;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:
 - a) the <mcvideo-request-uri> element set to the group identity of the MCVideo group hosted by the non-controlling MCVideo function in the partner MCVideo system; and
 - b) the <mcvideo-calling-group-id> element set to the group identity of the group served by the controlling MCVideo function;
- 5) shall include the Recv-Info header field set to g.3gpp.mcvideo-transmission-request;
- 6) if:
 - a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and
 - b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

then:

- a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:
 - i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and
 - ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request;
- 7) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1; and

- 8) shall send the SIP INVITE request towards the partner MCVideo system in accordance with 3GPP TS 24.229 [11].

...

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and

NOTE 3: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2.

- 2) if at least one of the invited MCVideo clients has subscribed to the conference package, shall subscribe to the conference event package in the non-controlling MCVideo function as specified in clause 9.2.3.4.3."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.2]

"In the procedures in this clause:

- 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) indication of required group members in a SIP 183 (Session Progress) response refers to the <required> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to "true" in a SIP 183 (Session Progress) sent by the non-controlling MCVideo function of an MCVideo group;
- 5) 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
- 6) 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 controlling MCVideo function of an MCVideo group", the controlling MCVideo function:

...

- 4) if received SIP 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 clause 6.3.3.1.17;
- 5) 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 clause 6.3.5.2;

...

- 7) shall perform the actions as described in clause 6.3.3.2.2;
- 8) shall maintain a local counter of the number of SIP 200 (OK) responses received from invited members and shall initialise this local counter to zero;
- 9) shall determine if an MCVideo group call for the group identity is already ongoing by determining if an MCVideo session identity has already been allocated for the group call and the MCVideo session is active;

...

13) if the MCVideo group call is not ongoing then:

...

- c) if the received SIP INVITE request contains an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined as determined in step 13) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;
- d) 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];
- e) shall create a prearranged group session and allocate an MCVideo session identity for the prearranged group call, and shall handle timer TNG3 (group call timer) as specified in clause 6.3.3.5;
- f) if the group identity in the "SIP INVITE request for controlling MCVideo function of an MCVideo group" is a TGI:
 - i) shall for each of the constituent MCVideo groups homed on the primary MCVideo system:
 - A) if the controlling MCVideo function does not own the MCVideo group identified by the MCVideo group ID, then generate a SIP INVITE request towards the MCVideo server that owns the MCVideo group identity by following the procedures in clause 9.2.1.4.1.2; and

NOTE 2: The MCVideo server that the SIP INVITE request is sent to acts as a non-controlling MCVideo function;

- B) if the controlling MCVideo function owns the MCVideo group identified by the MCVideo group ID then:
 - I) determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;
 - II) invite each group member determined in step A) above, to the group session, as specified in clause 9.2.1.4.1.1; and
 - III) interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and
- ii) shall for each of the constituent MCVideo groups homed on the partner MCVideo system generate a SIP INVITE request for the MCVideo group identity homed on the partner MCVideo system as specified in clause 9.2.1.4.1.2; and
- g) if the group identity in the SIP INVITE request for controlling MCVideo function of an MCVideo group is an MCVideo group ID:
 - i) shall determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;
 - ii) if necessary, shall start timer TNG1 (acknowledged call setup timer) according to the conditions stated in clause 6.3.3.3;
 - iii) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":
 - A) shall cache the information that this MCVideo user has initiated an MCVideo emergency call;
 - B) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall 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"; and

- II) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in clause 6.3.3.1.16;
 - iv) if the in-progress emergency state of the group is set to a value of "false" and if the received SIP INVITE request contains an imminent peril indication set to a value of "true", the controlling MCVideo function shall:
 - A) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
 - B) if the in-progress imminent peril state of the group is set to a value of "false", shall set the in-progress imminent peril state of the group to a value of "true";
 - v) shall invite each group member determined in step 13)g)i) above, to the group session, as specified in clause 9.2.1.4.1.1; and
 - vi) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and
- 14) if the MCVideo group call is ongoing then:
- ...
- c) 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];
- ...
- e) if the received SIP INVITE request contains an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined in step 14) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;
 - f) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":
 - i) shall cache the information that this MCVideo user 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 authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall cache the information that this MCVideo user has initiated an MCVideo emergency alert;
 - iii) 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 clause 6.3.3.1.16; and
 - C) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.6;
 - iv) if the in-progress imminent peril 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 imminent peril indication as specified in clause 6.3.3.1.11, setting 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
 - v) 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];

- g) 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", the controlling MCVideo function:
 - i) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
 - ii) if the in-progress imminent peril state of the group is set to a value of "false":
 - A) shall set the in-progress imminent peril state of the group to a value of "true";
 - B) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.15; and
 - C) 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
 - iii) if the in-progress imminent peril 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 imminent peril indication as specified in clause 6.3.3.1.11, setting 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];
- h) shall generate a SIP 200 (OK) response as specified in the clause 6.3.3.2.4.2;
- i) 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 clause 6.3.3.2.1;
- j) shall include in the SIP 200 (OK) response with the warning text set to "123 MCVideo session already exists" as specified in clause 4.4;
- k) if the received SIP re-INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- l) 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" 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 clause 4.4;

NOTE 4: 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.

- m) shall interact with media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 5: Resulting media plane processing is completed before the next step is performed.

- n) shall send the SIP 200 (OK) response towards the inviting MCVideo client or inviting non-controlling MCVideo function according to 3GPP TS 24.229 [11];
- o) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4;

NOTE 6: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- p) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11];

- q) Upon receiving a SIP ACK to the above SIP 200 (OK) response and the SIP 200 (OK) response contained a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall follow the procedures in clause 6.3.3.1.18; and
- r) shall not continue with the rest of the clause.

Upon receiving a SIP 183 (Session Progress) response to the SIP INVITE request specified in clause 9.2.1.4.1 containing a P-Answer-State header field with the value "Unconfirmed" as specified in IETF RFC 4964 [30], the timer TNG1 (acknowledged call setup timer) is not running, the controlling MCVideo function supports media buffering and the SIP final response is not yet sent to the inviting MCVideo client:

- 1) shall generate a SIP 200 (OK) response to SIP INVITE request as specified in the clause 6.3.3.2.3.2;
- ...
- 3) 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 clause 6.3.3.2.1;
- 4) shall include a P-Answer-State header field with the value "Unconfirmed";
- 5) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- 6) 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 clause 4.4;
- 7) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 7: Resulting user plane processing is completed before the next step is performed.

- 8) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 9) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 8: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 10) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response for a SIP INVITE request as specified in clause 9.2.1.4.1.2 containing an indication of required group members, the timer TNG1 (acknowledged call setup timer) is running and all SIP 200 (OK) responses have been received to all SIP INVITE requests sent to MCVideo clients specified in clause 9.2.1.4.1.1, then the controlling MCVideo function shall wait until the SIP 200 (OK) response has been received to the SIP INVITE request specified in clause 9.2.1.4.1.2 before generating a SIP 200 (OK) response to the "SIP INVITE request for controlling MCVideo function of an MCVideo group".

Upon receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1 that was sent to an affiliated and <on-network-required> group member as specified in 3GPP TS 24.481 [24]; and

- 1) if the MCVideo ID in the SIP 200 (OK) response matches to the MCVideo ID in the corresponding SIP INVITE request;
- 2) there are no outstanding SIP 200 (OK) responses to SIP INVITE requests which were sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24]; and
- 3) there is no outstanding SIP 200 (OK) response to a SIP INVITE request sent in clause 9.2.1.4.1.2 where the SIP 183 (Session Progress) response contained an indication of required group members;

the controlling MCVideo function:

- 1) shall stop timer TNG1 (acknowledged call setup timer) as described in clause 6.3.3.3;
- 2) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;
- ...
- 4) 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 clause 6.3.3.2.1;
- 5) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 9: Resulting media plane processing is completed before the next step is performed.

- 6) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 7) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 10: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 8) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon:

- 1) receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1;
- 2) the timer TNG1 (acknowledged call setup timer) is not running;
- 3) the local counter of the number of SIP 200 (OK) responses received from invited members is equal to the value of the <on-network-minimum-number-to-start> element of the group document;
- 4) the controlling MCVideo function supports media buffering; and
- 5) the SIP final response has not yet been sent to the inviting MCVideo client;

the controlling MCVideo function according to local policy:

- 1) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.2;
- ...
- 3) 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 clause 6.3.3.2.1;
- 4) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;
- 5) 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 clause 4.4;
- 6) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 11: Resulting media plane processing is completed before the next step is performed.

- 7) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];

- 8) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 12: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 9) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon expiry of timer TNG1 (acknowledged call setup timer), if there are outstanding SIP 200 (OK) responses to SIP INVITE requests sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24], the controlling MCVideo function shall follow the procedures specified in clause 6.3.3.3.

...

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 clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.1.4.3]

"Upon receiving a SIP BYE request the controlling MCVideo function shall follow the procedures as specified in clause 6.3.3.2.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.3.2.2.5.2]

"When receiving a "SIP INVITE request for terminating participating MCVideo function" for an on-demand session that requires automatic commencement mode the participating MCVideo function:

- 1) if:
 - a) the incoming SIP INVITE request contained a Priv-Answer-Mode header field set to the value of "Auto";
 - b) no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; or
 - c) the incoming SIP INVITE request contained an Answer-Mode header field set to "Auto" and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer";

then:

- a) shall generate a SIP 183 (Session Progress) response to the "SIP INVITE request for terminating participating MCVideo function" as specified in clause 6.3.2.2.4.1; and

NOTE: The SIP 183 (session Progress) response can be sent reliably or unreliably depending on the content of the received SIP INVITE request. Regardless of if the SIP 183 (Session Progress) response is sent reliably or unreliably, SDP is not included in the SIP 183 (Session Progress) response.

- b) shall set the P-Answer-State header field to "Unconfirmed" in the SIP 183 (Session Progress) response;
- 2) shall copy the public user identity contained in the Request-URI of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the SIP 183 (Session Progress) response;
- 3) shall generate a SIP INVITE request as specified in clause 6.3.2.2.3;
- 4) shall set the Request-URI to the public user identity associated to the MCVideo ID of the MCVideo user to be invited;
- 5) shall perform the procedures specified in clause 6.3.2.2.9 to include any MIME bodies in the received SIP INVITE request, into the outgoing SIP INVITE request;

- 6) 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;
- 7) if the Priv-Answer-Mode header field is present in the incoming SIP INVITE request with a value of "Auto", shall include a Priv-Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request. Otherwise, if the Answer-Mode header field is present in the incoming SIP INVITE request, the participating MCVideo function shall include an Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request;
- 8) if no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer", shall set the Answer-Mode header field to "Auto" in the outgoing SIP INVITE request;
- 9) 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 clause 6.3.2.2.1;
- 10) 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; and
- 11) shall send the SIP INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

If the SIP 183 (Session Progress) response was sent reliably, then upon receiving a SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, 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) if the SIP 183 (Session Progress) was sent unreliably, shall send the SIP 200 (OK) response immediately; and
- 2) if the SIP 183 (Session Progress) was sent reliably and,
 - a) if the SIP PRACK request to the SIP 183 (Session Progress) response has been received by the participating MCVideo function and the SIP 200 (OK) response to the SIP PRACK request has been sent, shall send the SIP 200 (OK) response immediately;
 - b) if the SIP PRACK request to the SIP 183 (Session Progress) response has not yet been received, then upon receipt of the SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, according to 3GPP TS 24.229 [11], before sending the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function".

When the participating MCVideo function sends the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as described in the clause 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 clause 6.3.2.2.2.1;
- 3) shall copy the P-Asserted-Identity header field from the incoming SIP 200 (OK) response to the outgoing SIP 200 (OK) response;
- 4) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 5) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

The participating MCVideo function shall forward any other SIP response that does not contain SDP along the signalling path to the originating network according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.2.3.1.2]

"When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in clause 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.*

[ETSI TS 124 281 [8] (3GPP 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 clause 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 clause and as specified in IETF RFC 5626 [35]."

[ETSI TS 124 581 [9] (3GPP 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.

When an MCVideo call is established a new instance of the transmission control server state machine for 'general reception 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 reception 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 rejoin 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 clause 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" fntp 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."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 6.3.3]

"When an MCVideo client leaves an MCVideo call and the MCVideo call remains ongoing with the other MCVideo clients, the transmission control server follows a two-step procedure.

- Step 1 The MCVideo server stops sending transmission control messages and RTP media packets to the MCVideo client leaving the MCVideo call and the MCVideo server discards transmission control messages and RTP media packets received from the MCVideo client leaving the MCVideo call.
- Step 2 When the application and signalling plane has determined that the MCVideo call with this transmission participant has been released, the corresponding instance of the transmission control server state machine for 'basic transmission control operation towards the transmission participant' and 'basic reception control operation towards the transmission participant' is released.

When an MCVideo call is released, the transmission control server follows a two-step procedure.

- Step 1 The MCVideo server stops sending transmission control messages and RTP media packets to all transmission participants in the MCVideo call.

Step 2 When the application and signalling plane has determined that the MCVideo call has been released, the corresponding instance of the transmission control server state machine for 'general transmission control operation' and 'general reception control operation' are also terminated, along with any 'basic transmission control operation towards the transmission participant' and any 'basic reception control operation towards the transmission participant' state machines for the transmission participants of this call.

The transmission control server state machine for general transmission control operation initiates the MCVideo call release depending on the release policy specified in 3GPP TS 24.281 [2]."

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or*
 - iii. *the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 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 clause 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 clause 10.2."

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or*
 - ii. *the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 14.2.3 in the latest received MBMS bearer listening status report, shall perform actions as specified in clause 10.2."*

[ETSI TS 124 581 [9] (3GPP 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 clause 9.3.2; and*
2. *in case of an on-demand session, shall release the media resources associated with the session."*

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 9.2.1]

"The transmission control messages are coded as described in clause 9.1.2 where the transmission control message is part of the application-dependent data.

For the transmission control protocol the ASCII name string is: MCVx (Mission Critical Video x) with x=0, 1 or 2 as specified in clause 9.1.2.

A list of transmission control messages can be found in clause 9.2.2.1.

The transmission control specific fields are specified in clause 9.2.3."

[ETSI TS 124 581 [9] (3GPP 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 clause 6.2.4 and a new instance of the 'Transmission participant state transition diagram for basic reception control operation' as specified in clause 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."*

[ETSI TS 124 581 [9] (3GPP 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	<i>The transmission participant stops sending transmission control and reception control messages and the MCVideo client stops sending and receiving RTP media packets.</i>
Step 2	<i>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 clause 6.2.4 and the corresponding instance of the 'Transmission participant state transition diagram for basic reception control operation' as specified in clause 6.2.5 are terminated and the transmission participant releases all the used resources.</i>

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

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 6.2.5]

"The transmission participant shall behave according to the state diagrams and the state transitions specified in this clause.

Figure 6.2.5.1-1 shows the state diagram for 'Transmission participant state transition diagram for general reception control operation'.

..."

6.1.1.4.3 Test description

6.1.1.4.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) are affiliated to the Prearranged group.
- The IUT (MCVideo Server) is the controlling server of the Prearranged group.

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	Make the SS-UE1 (MCVideo Client) request the establishment of a pre-arranged group call to SS-UE2 (MCVideo Client) with automatic commencement mode and implicit transmission request.	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.1.3-1 to establish a pre-arranged group call with automatic commencement mode and implicit transmission control request according to option b.ii of note in Annex A, Table A.3.1.3-1?	-	-	1	P
3	Make the SS-UE2 (MCVideo Client) request media reception from SS-UE1 (MCVideo Client).	-	-	-	-
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Media Reception Request and Response' as described in Annex A, Table A.3.9.3-1?	-	-	2	P
5	Make the SS-UE2 (MCVideo Client) request end of media reception.	-	-	-	-
6	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Media Reception End Request and Response' as described in Annex A, Table A.3.10.3-1?	-	-	3	P
7	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
8	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	4	P
9	Make the SS-UE1 (MCVideo Client) request transmission.	-	-	-	-
10	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1?	-	-	5	P
11	Make the SS-UE2 (MCVideo Client) request media reception from SS-UE1 (MCVideo Client).	-	-	-	-
12	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Media Reception Request and Response' as described in Annex A, Table A.3.9.3-1?	-	-	2	P
13	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
14	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1 while the SS-UE2 (MCVideo Client) is still permitted to receive media from SS-UE1 (MCVideo Client)?	-	-	4	P
15	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
16	Check: Does the MCVideo server correctly perform procedure 'MCX E2E call release' as described in Annex A, A.2.19.3-1?	-	-	6	P

6.1.1.4.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.1.1.4.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.1.1.4.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.4.3.3-2: SIP INVITE from the IUT (MCVideo Server) (Step 2, Table 6.1.1.4.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.4.3.3-3: SIP 200 (OK) from the SS-UE2 (Step 2, Table 6.1.1.4.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-7, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.1.4.3.3-4: SIP 200 (OK) from the IUT (MCVideo Server) (Step 2, Table 6.1.1.4.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-9, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

6.1.2 Chat Group Calls

6.1.2.1 MCVideo Server - MCVideo Client / Chat Group Call / On-demand / Join Chat Group Session / Upgrade to Emergency / Cancel Emergency / Upgrade to Imminent Peril / Cancel Imminent Peril

6.1.2.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo client ) requests session establishment of chat group call without
implicit transmission control with sending SIP INVITE message }
    then { IUT (MCVideo Server) responds with optional SIP 100 Trying and mandatory 200 (OK) message }
}
```

(2)

```
with { IUT (MCVideo Server) having established an ongoing On-demand Chat Group Call }
ensure that {
  when { the SS-UE2 (MCVideo client ) requests session establishment of chat group call without
implicit transmission control with sending SIP INVITE message }
    then { IUT (MCVideo Server) responds with optional SIP 100 Trying and mandatory 200 (OK) message }
}
```

(3)

```
with { IUT (MCVideo Server) having established an ongoing On-demand Chat Group Call }
ensure that {
  when { the SS-UE1 (MCVideo Client) upgrades the call to emergency group call with implicit
transmission control }
    then { IUT (MCVideo Server) accepts the upgrade from the initiator and updates the call with all
affiliated users of the group and sends transmission granted to the SS-UE1 (MCVideo client)}
}
```

(4)

```
with { IUT (MCVideo Server) having established an ongoing Emergency Chat Group Call }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests the end of transmission control }
    then { IUT (MCVideo Server) sends transmission idle to the SS-UE1 (MCVideo Client) and sends
transmission idle to the SS-UE2 (MCVideo Client) }
}
```

(5)

```
with { IUT (MCVideo Server) having established an ongoing On-demand Chat Group Call }
ensure that {
  when { the SS-UE1 (MCVideo Client) downgrades the call to a normal group call }
    then { IUT (MCVideo Server) accepts the downgrade from the initiator and updates the call with
all affiliated users of the group without implicit transmission request }
}
```

(6)

```
with { IUT (MCVideo Server) having established an ongoing On-demand Chat Group Call }
ensure that {
  when { the SS-UE1 (MCVideo Client) upgrades the call to imminent peril group call with implicit
transmission control }
    then { IUT (MCVideo Server) accepts the call from the initiator and establishes the call with
all affiliated users of the group and sends transmission granted to the SS-UE1 (MCVideo Client) }
}
```

(7)

```
with { IUT (MCVideo Server) having established an ongoing On-demand Pre-arranged Chat Group Call }
ensure that {
  when { the SS-UE1 (MCVideo Client) ends the chat group call }
    then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the other participants }
}
```

6.1.2.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 9.2.2.3.1.1, 9.2.2.3.1.2, 9.2.2.3.1.3, 9.2.2.3.1.4, 9.2.2.4.1.1, 9.2.2.4.1.2, 9.2.2.4.1.3, 9.2.2.4.2, 9.2.2.4.3.2. Unless otherwise stated, these are Rel-14 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.2.3.1.1]

"In the procedures in this clause:

- 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:

...

- 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 clause 7.3.

...

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 authorised request for originating a priority call as determined by clause 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 clause 8.2.2.2.11, shall perform the actions specified in clause 8.2.2.2.12 for implicit 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 clause 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 clause 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 clause 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 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 clause 6.3.2.3.2;
- 2) shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2;
- 3) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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 clause 8.2.2.2.12 for implicit affiliation were performed in the present clause, shall complete the implicit affiliation by performing the procedures of clause 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].

..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.2.3.1.2]

"This clause covers on-demand session.

Upon receipt of a SIP re-INVITE request for a served MCVideo client of a chat MCVideo group, the participating MCVideo function:

...

- 3) shall generate an outgoing SIP re-INVITE request as specified in clause 6.3.2.1.9;
- 4) shall, if the SIP re-INVITE request was received within an on-demand session, include in the SIP re-INVITE request an SDP offer based on the SDP offer in the received SIP re-INVITE request as specified in clause 6.3.2.1.1.1;
- 5) if the received SIP re-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;
- 6) if the received SIP re-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; and

NOTE 3: The controlling MCVideo function will determine the validity of the Resource-Priority header field.

7) shall forward the SIP re-INVITE request according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response to the above SIP re-INVITE request in step 7) 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) shall include Warning header field(s) that were received in the incoming SIP 200 (OK) response; and
- 4) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];

..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.2.3.1.3]

"This clause 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:

...

- 3) shall generate a SIP INVITE request as specified in clause 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 clause 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 clause 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 clause 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 clause 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.2.3.1.4]

"This clause covers both on-demand session.

Upon receipt of a SIP re-INVITE request for a terminating MCVideo client of a chat MCVideo group, the participating MCVideo function:

- 1) *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];*
- 2) *shall generate an outgoing SIP re-INVITE request as specified in clause 6.3.2.2.10;*
- 3) *shall include in the SIP re-INVITE request an SDP offer based on the SDP offer in the received SIP re-INVITE request as specified in clause 6.3.2.2.1; and*
- 4) *shall send the SIP re-INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].*

Upon receiving a SIP 200 (OK) response to the above SIP re-INVITE request sent to the MCVideo client, the participating MCVideo function:

- 1) *shall generate a SIP 200 (OK) response as described in the clause 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 clause 6.3.2.2.1; and*
- 3) *shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11]."*

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.2.4.1.1]

"In the procedures in this clause:

- 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:

...

- 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 clause 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 clause 6.3.5.2 and continue with the rest of the steps if the checks in clause 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 clause 6.3.6:
 - a) shall check if the MCVideo user is eligible to be implicitly affiliated with the MCVideo chat group as determined by clause 8.2.2.3.6; and
 - ...
- 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 clause 6.3.3.5;
 - ...
- 12) if the received SIP INVITE request was determined to be eligible for implicit affiliation in step 5) and if clause 8.2.2.3.7 was not previously invoked in the present clause, shall perform the implicit affiliation as specified in clause 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 clause 6.3.3.1.19, and if not:
 - i) perform the actions specified in clause 6.3.3.1.8;
 - ii) send the SIP UPDATE request generated in clause 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 clause 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 clause 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 authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 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 authorised 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 clause 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 clause 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 clause 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 authorised request for an MCVideo emergency alert as specified in clause 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 clause 6.3.3.1.19, and if not:
 - i) perform the actions specified in clause 6.3.3.1.8;
 - ii) send the SIP UPDATE request generated in clause 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 clause 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 clause 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 clause 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 clause 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 clause 6.3.3.2.1 unless the procedures of clause 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];
 - ...
 - 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 clause 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 clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.2.4.1.2]

"In the procedures in this clause:

- 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:

...

- 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 clause 6.3.3.1.17;

...

- 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 authorised request to initiate an MCVideo emergency group call as determined by clause 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 clause 6.3.3.1.19, and if not:
 - i) shall perform the actions specified in clause 6.3.3.1.8; and
 - ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in clause 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 authorised request for an MCVideo emergency alert as determined by clause 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 clause 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 authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 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 authorised request for an MCVideo emergency alert as specified in clause 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 clause 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 clause 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 clause 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";
 - ...
 - 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 authorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4 and the in-progress emergency state of the group 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 clause 6.3.3.1.19, and if not:
 - i) shall perform the actions specified in clause 6.3.3.1.8; and
 - ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in clause 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 authorised request for an MCVideo emergency alert cancellation as specified in clause 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 clause 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: Clause 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 clause 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:
- ...
- 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 authorised request for an MCVideo imminent peril call as determined by the procedures of clause 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 clause 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 clause 6.3.3.2.1 unless the procedures of clause 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];
- ...
- 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 authorised 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 clause 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 clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.2.4.1.3]

"In the procedures in this clause:

- 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:

...

- 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 clause 6.3.3.1.8;
 - ii) send the SIP UPDATE request generated in clause 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 clause 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 clause 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 clause 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 clause 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;
- ...
- 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 authorised request for an

MCVideo imminent peril call cancellation as specified in clause 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 clause 6.3.3.1.8; and*
 - ii) *upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in clause 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 clause 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: *clause 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 clause 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 clause 6.3.3.2.1 unless the procedures of clause 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]."*

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.2.4.2]

"Upon receiving a SIP BYE request the controlling MCVideo function shall follow the procedures as specified in clause 6.3.3.2.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.2.4.3.2]

"When the MCVideo session for group call needs to be released as specified in clause 6.3.8.1, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.4."

6.1.2.1.3 Test description

6.1.2.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) are affiliated to the Chat group.
- The IUT (MCVideo Server) is the controlling server of the Chat group.

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 SS-UE1 (MCVideo Client) request the establishment of a chat group call to Group A without implicit transmission request.	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Participating Terminated session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.4.3-1 to establish a chat group call without implicit transmission control request according to option a of note in Annex A, Table A.3.4.3-1?	-	-	1	P
3	Make the SS-UE2 (MCVideo Client) request the establishment of a chat group call to Group A, to join chat group session without implicit transmission request.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Participating Terminated session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.4.3-1 to join a chat group call without implicit transmission control request according to option a of note in Annex A, Table A.3.4.3-1?	-	-	2	P
5	Make the SS-UE1 (MCVideo Client) request upgrade of the call to an emergency group call with implicit transmission request.	-	-	-	-
6	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to upgrade the call to emergency group call with implicit transmission request according to option b.ii of note in Annex A, Table A.3.1.3-1?	-	-	3	P
7	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
8	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	4	P
9	Make the SS-UE1 (MCVideo Client) request downgrade of the call to a normal group call.	-	-	-	-
10	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to downgrade the call without implicit transmission request, with option a of note on Table A.3.1.3-1?	-	-	5	P
11	Make the SS-UE1 (MCVideo Client) request upgrade of the call to an imminent peril group call with implicit transmission request.	-	-	-	-
12	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to upgrade the call to imminent peril group call with implicit transmission request according to option b.ii of note in Annex A, Table A.3.1.3-1?	-	-	6	P
13	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
14	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	4	P
15	Make the SS-UE1 (MCVideo Client) request downgrade of the call to a normal group call.	-	-	-	-
16	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to downgrade the call without implicit transmission request, with option a of note on Table A.3.1.3-1?	-	-	5	P
17	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
18	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	7	P

6.1.2.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

**Table 6.1.2.1.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.4.3-1; Step 1, Annex A, Table A.2.14.3-1)**

Derivation Path: Annex A, Table A.3.4.4-1, with condition CHAT-GROUP-CALL.
NOTE: Condition is also applied to all body parts.

**Table 6.1.2.1.3.3-2: SIP 200 (OK) from the IUT (MCVideo Server)
(Steps 2, 4, 6, 10, 12 and 16, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1
Step 1, Annex A, Table A.3.4.3-1, Step 3, Annex A, Table A.2.14.3-1)**

Derivation Path: Annex A, Table A.3.4.4-2, with condition CHAT-GROUP-CALL.
NOTE: Condition is also applied to all body parts.

**Table 6.1.2.1.3.3-3: SIP INVITE from the SS-UE2 (Step 4, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.4.3-1; Step 1, Annex A, Table A.2.14.3-1)**

Derivation Path: Annex A, Table A.3.4.4-1, with condition CHAT-GROUP-CALL.
NOTE: Condition is also applied to all body parts.

**Table 6.1.2.1.3.3-4: SIP 200 (OK) from the SS-UE2 (Steps 6, 10, 12 and 16, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)**

Derivation Path: Annex A, Table A.3.1.4-7, with condition CHAT-GROUP-CALL.
NOTE: Condition is also applied to all body parts.

**Table 6.1.2.1.3.3-5: SIP re-INVITE from the SS-UE1 (Step 6, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)**

Derivation Path: Annex A, Table A.3.1.4-1, with conditions CHAT-GROUP-CALL, re_INVITE and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

**Table 6.1.2.1.3.3-6: SIP re-INVITE from the IUT (MCVideo Server) (Step 6, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)**

Derivation Path: Annex A, Table A.3.1.4-4, with condition CHAT-GROUP-CALL, re_INVITE and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

**Table 6.1.2.1.3.3-7: SIP re-INVITE from the SS-UE1 (Steps 10 and 16, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)**

Derivation Path: Annex A, Table A.3.1.4-1, with conditions CHAT-GROUP-CALL and re_INVITE.
NOTE: Conditions are also applied to all body parts.

**Table 6.1.2.1.3.3-8: SIP re-INVITE from the IUT (MCVideo Server)
(Steps 10 and 16, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)**

Derivation Path: Annex A, Table A.3.1.4-4, with condition CHAT-GROUP-CALL and re_INVITE.
NOTE: Conditions are also applied to all body parts.

**Table 6.1.2.1.3.3-9: SIP re-INVITE from the SS-UE1 (Step 12, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)**

Derivation Path: Annex A, Table A.3.1.4-1, with conditions CHAT-GROUP-CALL, re_INVITE and IMPERIL -CALL.
NOTE: Conditions are also applied to all body parts.

**Table 6.1.2.1.3.3-10: SIP re-INVITE from the IUT (MCVideo Server) (Step 12, Table 6.1.2.1.3.2-1;
Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)**

Derivation Path: Annex A, Table A.3.1.4-4, with conditions CHAT-GROUP-CALL, re_INVITE and IMPERIL-CALL.
NOTE: Conditions are also applied to all body parts.

**Table 6.1.2.1.3.3-11: Transmission Idle from the IUT (MCVideo Server)
(Step 8, Table 6.1.2.1.3.2-1; Steps 4 and 5, Annex A, Table A.3.8.3-1)**

Derivation Path: Annex A, Table A.3.8.4-6 with condition EMERGENCY-CALL.

**Table 6.1.2.1.3.3-12: Transmission Granted from the IUT (MCVideo Server)
(Step 6, Table 6.1.2.1.3.2-1; Step 2a1, Annex A, Table A.3.1.3-1)**

Derivation Path: Annex A, Table A.3.1.4-11 (note), with condition EMERGENCY-CALL.
NOTE: Depends on server implementation.

**Table 6.1.2.1.3.3-13: Media Transmission Notification from the IUT (MCVideo Server)
(Step 6, Table 6.1.2.1.3.2-1; Step 3a1, Annex A, Table A.3.1.3-1)**

Derivation Path: Annex A, Table A.3.1.4-12 (note), with condition EMERGENCY-CALL.
NOTE: Depends on server implementation.

**Table 6.1.2.1.3.3-14: Transmission Idle from the IUT (MCVideo Server)
(Step 14, Table 6.1.2.1.3.2-1; Steps 4 and 5, Annex A, Table A.3.8.3-1)**

Derivation Path: Annex A, Table A.3.8.4-6 with condition IMPERIL-CALL.

**Table 6.1.2.1.3.3-15: Transmission Granted from the IUT (MCVideo Server)
(Step 12, Table 6.1.2.1.3.2-1; Step 2a1, Annex A, Table A.3.1.3-1)**

Derivation Path: Annex A, Table A.3.1.4-11 (note), with condition IMPERIL-CALL.
NOTE: Depends on server implementation.

**Table 6.1.2.1.3.3-16: Media Transmission Notification from the IUT (MCVideo Server)
(Step 12, Table 6.1.2.1.3.2-1; Step 3a1, Annex A, Table A.3.1.3-1)**

Derivation Path: Annex A, Table A.3.1.4-12 (note), with condition IMPERIL-CALL.
NOTE: Depends on server implementation.

6.1.3 Subscription to Conference Event Package

6.1.3.1 MCVideo Server - MCVideo Client / Conference Event Package / Subscription to Conference Event Package / Termination of subscription

6.1.3.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo client) requests session establishment of chat group call without
implicit transmission control with sending SIP INVITE message }
  then { IUT (MCVideo Server) responds with optional SIP 100 Trying and mandatory 200 (OK) message
}
}
```

(2)

```
with { IUT (MCVideo Server) having established a Chat Group Call without implicit transmission
control }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests to the conference event package for the ongoing group
call with SIP SUBSCRIBE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends a SIP NOTIFY message
}
}
```

(3)

```
with { IUT (MCVideo Server) having established a Chat Group Call without implicit transmission
control }
ensure that {
  when { the SS-UE2 (MCVideo Client) requests session establishment of chat group call without
implicit transmission control with sending SIP INVITE message }
  then { IUT (MCVideo Server) responds with optional SIP 100 Trying and mandatory 200 (OK) message
}
}
```

(4)

```
with { IUT (MCVideo Server) having established a Chat Group Call with the clients }
ensure that {
  when { the IUT (MCVideo Server) triggers notification to indicate status joint client to the group
}
  then { the IUT (MCVideo Server) requests notification by sending SIP NOTIFY message }
}
```

(5)

```
with { IUT (MCVideo Server) having established a Chat Group Call with the clients }
ensure that {
  when { the SS-UE1 (MCVideo client) requests to de-subscribe from MCVideo service settings with SIP
SUBSCRIBE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) message and sends a SIP NOTIFY message
}
}
```

(6)

```
with { IUT (MCVideo Server) having established a Chat Group Call with the clients }
ensure that {
  when { the SS-UE1 (MCVideo Client) ends the chat group call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the other participants }
}
```

6.1.3.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 9.2.3.1, 9.2.3.3, 9.2.3.4.1, 9.2.3.4.2, 9.2.3.4.3, 9.2.3.4.4. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.3.1]

"The IETF RFC 4575 [57] defines a conference state event package that shall be used to obtain the status of participants in group sessions.

The MCVideo client may subscribe to the conference state event package at any time in a group session that the MCVideo client participates in. The clause 9.2.3.2 specifies the procedures in the MCVideo client when subscribing to the conference events.

The participating MCVideo function shall forward conference state subscriptions and notifications as specified in clause 9.2.3.3.

The controlling MCVideo function shall handle subscriptions and notification of conference state events as specified in clause 9.2.3.4.

The non-controlling MCVideo function shall handle subscriptions and notification of conference state events as specified in clause 9.2.3.4.

When the non-controlling MCVideo function connection model is used, the controlling MCVideo function subscribes to the conference state event package from the non-controlling MCVideo function as specified in clause 9.2.3.4.3 and the non-controlling MCVideo function subscribes to the conference state event package from the controlling MCVideo function as specified in clause 9.2.3.5.3."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.3.3]

"Upon receipt of a SIP SUBSCRIBE request for conference event status subscription from a MCVideo user served by the participating MCVideo function and if the SIP SUBSCRIBE request contains:

- 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];*
- 2) *an Accept header field containing the application/conference-info+xml MIME type; and*
- 3) *an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> set to a MCVideo group ID;*

then the participating MCVideo function:

- 1) *shall attempt to resolve the received Request-URI to an existing MCVideo session identity;*
- ...
- 3) *shall generate a SUBSCRIBE request as specified in TS 24.229 [11]*
- 4) *shall set the SIP URI in the Request-URI with the MCVideo session identity that is mapped to the MCVideo session identity in the received Request-URI;*
- 5) *shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body the <mcvideo-calling-user-id> element set to the MCVideo ID of the served user; and*
- 6) *shall insert a Record-Route header containing a URI identifying its own address; and*
- 7) *shall send the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11].*

Upon receiving a SIP response to the SIP SUBSCRIBE request the participating MCVideo function:

- 1) *shall copy the content of the incoming SIP response to an outgoing SIP response;*
- 2) *if a SIP 200 (OK) response, shall include in the Contact header field of the outgoing SIP response an MCVideo session identity mapped to the MCVideo session identity provided in the Contact header field of the received SIP 200 (OK) response in the outgoing SIP response; and*

- 3) shall forward the SIP response according to 3GPP TS 24.229 [11].

Upon receiving a SIP NOTIFY request within the dialog created by the SIP SUBSCRIBE request destined to a served MCVideo client, the participating MCVideo function:

- 1) shall include the public service identity of the MCVideo user in the Request-URI;
- 2) shall copy the content of the incoming SIP NOTIFY request to the outgoing SIP NOTIFY request; and
- 3) shall send the SIP NOTIFY request according to 3GPP TS 24.229 [11].

Upon receiving a SIP response to the SIP NOTIFY request the participating MCVideo function:

- 1) shall copy the content of the incoming SIP response to an outgoing SIP response;
- 2) if a SIP 200 (OK) response, shall include an MCVideo session identity constructed from the MCVideo session identity provided in the Contact header field of the received SIP 200 (OK) response in the outgoing SIP response; and
- 3) shall forward the SIP response according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.3.4.1]

"Upon receipt of a SIP SUBSCRIBE request for event package subscription in the controlling MCVideo function and the SIP SUBSCRIBE request:

- 1) contains an application/vnd.3gpp.mcvideo-info+xml MIME body with
 - a) the <mcvideo-request-uri> element set to the group identity of the group session and the <mcvideo-calling-user-id> element set to either:
 - i) the MCVideo ID of a participant in the group session; or
 - ii) a constituent MCVideo group ID of a non-controlling MCVideo function in a temporary group session;
- 2) contains 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];
- 3) contains an Accept header field containing the application/conference-info+xml MIME type; and
- 4) is not received in a group call initiated as a broadcast group call;

then the controlling MCVideo function:

...

- 2) shall handle the request according to IETF RFC 6665 [16] and IETF RFC 4575 [57];
- 3) shall cache information about the subscription;
- 4) shall send a conference state notification as specified in clause 9.2.3.4.2; and
- 5) if the SIP SUBSCRIBE request is the first SUBSCRIBE request from a participant in a temporary group session, shall subscribe to the conference event package from all non-controlling MCVideo functions in the group session as specified in clause 9.2.3.4.3.

Upon receipt of a SIP SUBSCRIBE request for event package subscription in the controlling MCVideo function in an group call initiated as a broadcast group call, the controlling MCVideo function:

- 1) shall generate a SIP 480 (Temporarily Unavailable) response to the SIP SUBSCRIBE request as specified in 3GPP TS 24.229 [11];
- 2) shall include a Warning header field with the warning text set to "105 subscription not allowed in a broadcast group call" as specified in clause 4.4; and
- 3) send the SIP 480 (Temporarily Unavailable) response according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.3.4.2]

"The procedures in this clause is triggered by:

- 1) *the receipt of a SIP SUBSCRIBE request as specified in clause 9.2.3.4.1;*
- 2) *the receipt of a SIP BYE request from one of the participants in a pre-arranged or a chat group session; or*
- 3) *when a new participant is added in a pre-arranged or chat group session.*

When sending a conference state event notification, the controlling MCVideo function:

- 1) *shall generate a notification package as specified in clause 6.3.3.4 to all MCVideo clients which have subscribed to the conference state event package; and*

NOTE: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

- 2) *shall send a SIP NOTIFY request to all participants which have subscribed to the conference state event package as specified in 3GPP TS 24.229 [11]."*

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.3.4.3]

"The procedure in this clause is triggered by:

- 1) *the receipt of a SIP 200 (OK) response to a SIP INVITE request for non-controlling MCVideo function of an MCVideo group and if at least one participant already has subscribed to the conference event package in the controlling MCVideo function as specified in clause 9.2.3.4.1; or*
- 2) *the receipt of the first SIP SUBSCRIBE request as specified in clause 9.2.3.4.1 and one or more participant in the group session is a non-controlling MCVideo function;*

then, for each non-controlling MCVideo function from where a SIP 200 (OK) response to a SIP INVITE request for non-controlling MCVideo function of an MCVideo group has been received and where a SIP SUBSCRIBE request is not already sent, the controlling MCVideo function:

- 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 public service identity of the non-controlling MCVideo function serving the group identity of the MCVideo group owned by the partner MCVideo system;*
- 3) *shall include the same P-Asserted-Identity header field as included in the SIP INVITE request for non-controlling MCVideo function of an MCVideo group;*
- 4) *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];*
- 5) *shall include an Accept-Contact header with the g.3gpp.mcvideo along with "require" and "explicit" header field parameters according to IETF RFC 3841 [20];*
- 6) *shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;*

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

- 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:*
 - a) *the <mcvideo-request-uri> element set to the constituent MCVideo group ID; and*
 - b) *the <mcvideo-calling-group-id> set to the temporary MCVideo group ID; 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 an incoming SIP NOTIFY requests to the previously sent SIP SUBSCRIBE request, the controlling MCVideo function:

- 1) *shall handle the request according to IETF RFC 6665 [16] and IETF RFC 4575 [57];*
- 2) *shall modify the SIP NOTIFY request as specified in clause 6.3.3.4; and*
- 3) *shall forward the modified SIP NOTIFY request according to 3GPP TS 24.229 [11] to all other participants with a subscription to the conference event package.*

NOTE: A non-controlling MCVideo function of an MCVideo group is regarded as a participant in a temporary group session."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.3.4.4]

"Upon receipt of a SIP SUBSCRIBE request for event status subscription in the controlling MCVideo function that terminates the subscription of the conference event package as specified in IETF RFC 6665 [16], the controlling MCVideo function:

- 1) *shall send a SIP 200 (OK) response as specified in IETF RFC 6665 [16]; and*
- 2) *if there are no remaining subscriptions to the event package in the ongoing MCVideo call in a temporary group session, shall terminate the subscriptions to the conference event package as specified in IETF RFC 6665 [16] in all non-controlling MCVideo functions in the temporary group session.*

Upon expiry of the subscription timer and if there are no remaining subscriptions to the event package in the ongoing MCVideo call in a temporary group session, the controlling MCVideo function shall terminate the subscriptions to the conference event package as specified in IETF RFC 6665 [16] in all non-controlling MCVideo functions in the temporary group session."

6.1.3.1.3 Test description

6.1.3.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) are affiliated to the Chat group.
- The IUT (MCVideo Server) is the controlling server of the Chat group.

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 SS-UE1 (MCVideo Client) request the establishment of a chat group call to Group A without implicit transmission request.	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Participating Terminated session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.4.3-1 to establish a chat group call without implicit transmission control request according to option a of note in Annex A, Table A.3.4.3-1?	-	-	1	P
3	Make the SS-UE1 (MCVideo Client) subscribe to the conference event package for the ongoing group call to receive the current status and later notifications.	-	-	-	-
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Subscription and Notification' as described in Annex A, Table A.2.7.3-1 to subscribe to the conference event package for the ongoing group call to receive the current status and later notifications?	-	-	2	P
5	Make the SS-UE2 (MCVideo Client) request the establishment of a chat group call to Group A, to join chat group session without implicit transmission request.	-	-	-	-
6	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Participating Terminated session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.4.3-1 to join a chat group call without implicit transmission control request according to option a of note in Annex A, Table A.3.4.3-1?	-	-	3	P
7	Check: Does the IUT (MCVideo Server) send a SIP NOTIFY message indicating that SS-UE2 (MCVideo Client) joined the chat group call?	<--	SIP NOTIFY	4	P
8	The SS-UE1 (MCVideo Client) responds with a SIP 200 (OK) message.	-->	SIP 200 (OK)	-	-
9	Make the SS-UE1 (MCVideo Client) de-subscribe from the conference event package for the ongoing group call to stop receiving status and notifications.	-	-	-	-
10	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Subscription and Notification' as described in Annex A, Table A.2.7.3-1 to de-subscribe from the conference event package for the ongoing group call to receive the current status and later notifications?	-	-	5	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
11	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
12	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	6	P

6.1.3.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.1.3.1.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.1.3.1.3.2-1; Step 1, Annex A, Table A.3.4.3-1; Step 1, Annex A, Table A.2.14.3-1)

Derivation Path: Annex A, Table A.3.4.4-1, with condition CHAT-GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.3.1.3.3-2: SIP 200 (OK) from the IUT (MCVideo Server) (Steps 2 and 6, Table 6.1.3.1.3.2-1; Step 1, Annex A, Table A.3.4.3-1, Step 3, Annex A, Table A.2.14.3-1)

Derivation Path: Annex A, Table A.3.4.4-2, with condition CHAT-GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.3.1.3.3-3: SIP INVITE from the SS-UE2 (Step 6, Table 6.1.3.1.3.2-1; Step 1, Annex A, Table A.3.4.3-1; Step 1, Annex A, Table A.2.14.3-1)

Derivation Path: Annex A, Table A.3.4.4-1, with condition CHAT-GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.1.3.1.3.3-4: SIP SUBSCRIBE from the SS-UE1 (Step 4, Table 6.1.3.1.3.2-1; Step 1, Annex A, Table A.2.7.3-1)

Derivation Path: Annex A, Table A.2.7.4-1, with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	MCVideo session identity of the group session as provided by the IUT (MCVideo Server) in the Contact header field of the SIP 200 OK at call establishment		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.3.2	
Accept-Contact				
ac-value				
feature-param	"+g.3gpp.icsi-ref=urn:urn-7:3gpp-service.ims.icsi.mcvideo"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.3.2	
req-param	"require"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.3.2	
explicit-param	"explicit"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.3.2	
Expires				
value	"4294967295"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.3.2	
Accept				

Derivation Path: Annex A, Table A.2.7.4-1, with condition MCVVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
media-range	"application/conference-info+xml"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.3.2	
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.3.1.3.3-5			

Table 6.1.3.1.3.3-5: MCVideo-Info in SIP SUBSCRIBE (Table 6.1.3.1.3.3-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_Group_A_ID	The URI of the group		
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

**Table 6.1.3.1.3.3-6: SIP NOTIFY from the IUT (MCVideo Server)
(Step 4, Table 6.1.3.1.3.2-1; Step 3, Annex A, Table A.2.7.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.8-1, with condition MCVVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Identity				
addr-spec				
user-info and host	tsc_MCVideo_PublicServiceId_A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 6.3.3.4	
Event				
event-type	"conference"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 6.3.3.4	
Expires				
value	"3600"	3600 seconds	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 6.3.3.4	
Subscription-State				
expires	"3600"			
P-Preferred-Service				
Service-ID	"urn:urn-7:3gpp-service.ims.icsi.mcvideo"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 6.3.3.4	
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.3.1.3.3-7			
MIME body part		Conference-Info		
MIME-part-body	Conference-Info as described in Table 6.1.3.1.3.3-8			

Table 6.1.3.1.3.3-7: MCVideo-Info in SIP NOTIFY (Table 6.1.3.1.3.3-6)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), 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) <mcvideo-calling-group-id> with mcvideoURI set to px_MCVideo_Group_A_ID			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

Table 6.1.3.1.3.3-8: Conference-Info in SIP NOTIFY (Table 6.1.3.1.3.3-6)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.15-1, with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
conference-info				
users				
user [2]	not present			
user [3]	not present			

Table 6.1.3.1.3.3-9: SIP NOTIFY from the MCVideo Server (Step 7, Table 6.1.3.1.3.2-1)

Derivation Path: Table 6.1.3.1.3.3-6				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.3.1.3.3-7			
MIME body part		Conference-Info		
MIME-part-body	Conference-Info as described in Table 6.1.3.1.3.3-10			

Table 6.1.3.1.3.3-10: Conference-Info in SIP NOTIFY (Table 6.1.3.1.3.3-9)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.15-1, with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
conference-info				
users				
user [2]				
endpoint				
status	connected			
user [3]	not present			

Table 6.1.3.1.3.3-11: SIP SUBSCRIBE from the SS-UE1 (Step 10, Table 6.1.3.1.3.2-1; Step 1, Annex A, Table A.2.7.3-1)

Derivation Path: Table 6.1.3.1.3.3-4				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
value	"0"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.3.2	

**Table 6.1.3.1.3.3-12: SIP NOTIFY from the MCVideo Server
(Step 10, Table 6.1.3.1.3.2-1; Step 3, Annex A, Table A.2.7.3-1)**

Derivation Path: Table 6.1.3.1.3.3-9				
Information Element	Value/remark	Comment	Reference	Condition
Subscription-State			IETF RFC 6665 [14]	
substate-value	"terminated"			
expires	not present			

6.1.4 Remote Change of Selected Group

6.1.4.1 MCVideo Server - MCVideo Client / Remote Change of Selected Group / Selected Group Change of Targeted User

6.1.4.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { SS-UE1 (MCVideo Client) requests to change the selected group of targeted user B, in the
  SS-UE2 (MCVideo Client), to group A by sending a SIP MESSAGE message }
  then { IUT (MCVideo Server) sends a SIP MESSAGE message to UE2 (MCVideo Client) and responds
  with a SIP 200 (OK) to UE1 (MCVideo Client) }
}
```

6.1.4.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 9.2.4.1, 9.2.4.3.1, 9.2.4.3.2, 9.2.4.4. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.4.1]

"Clause 9.2.4 specifies the MCVideo client procedures, participating MCVideo function procedures and controlling MCVideo function procedures for the on-network remote change of an MCVideo user's selected group."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.4.3.1]

"Upon receiving a "SIP MESSAGE request for group-selection-change for originating participating MCVideo function" the participating MCVideo function:

...

- 2) *shall determine the MCVideo ID of the calling user from the public user identity in the P-Asserted-Identity header field of the SIP MESSAGE request, and shall authorise the calling user;*

NOTE: *The MCVideo 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 determine the public service identity of the controlling MCVideo function associated with the group identity contained in the <mcvideo-request-uri> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body;*
- 5) *shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33];*
- 6) *shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the controlling MCVideo function associated with the group identity contained in the received SIP MESSAGE request;*
- 7) *shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 included in the outgoing SIP MESSAGE request;*

- 8) shall copy the contents of the application/resource-lists MIME body into the outgoing SIP MESSAGE request;
- 9) shall set the <mcvideo-calling-user-id> element of the <mcvideoinfo> element containing the <mcvideo-Params> element to the MCVideo ID determined in step 2) above;
- 10) shall set the P-Asserted-Identity in the outgoing SIP MESSAGE request to the public user identity in the P-Asserted-Identity header field contained in the received SIP MESSAGE request;
- 11) 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];
- 12) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 13) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), into the P-Asserted-Service header field of the outgoing SIP MESSAGE request; and
- 14) shall send the SIP MESSAGE request as specified to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response in response to the sent SIP MESSAGE request, the participating MCVideo function shall generate a SIP 200 (OK) response and forward the SIP 200 (OK) response to the MCVideo client.

..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.4.3.2]

"Upon receiving a "SIP MESSAGE request for group-selection-change for terminating participating MCVideo function" the participating MCVideo function:

...

- 2) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP MESSAGE request to retrieve the binding between the MCVideo ID and public user identity;

...

- 4) shall generate an outgoing SIP MESSAGE request as specified in clause 6.3.2.2.11;
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), into the P-Asserted-Service header field of the outgoing SIP MESSAGE request; and
- 6) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the participating MCVideo function shall forward the SIP 2xx response to the controlling MCVideo function.

..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 9.2.4.4]

"Upon receiving:

- a "SIP MESSAGE request for group selection change request for controlling MCVideo function"; or
- a "SIP MESSAGE request for group selection change response for controlling MCVideo function";

the controlling MCVideo function:

...

- 3) if there is a <request-type> element set to a value of "group-selection-change-request" contained in the <anyExt> element in the <mcvideo-Params> element contained in the <mcvideoinfo> root element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP MESSAGE request:
 - a) if the MCVideo user identified by the MCVideo ID in the application/resource-lists MIME body contained in the SIP MESSAGE request is not affiliated with the MCVideo group identified by the <mcvideo-request-uri> in the application/vnd.3gpp.mcvideo-info+xml MIME body as determined by the procedures of clause 6.3.6:
 - i) shall determine if the MCVideo user is eligible to be affiliated with the MCVideo group as determined by clause 8.2.2.3.8; and
 - ...
 - 4) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33];
 - 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 an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref 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 copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request with the following clarifications:
 - a) shall set the <mcvideo-calling-group-id> to the MCVideo group identity contained in the <mcvideo-request-uri> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body included in the received SIP MESSAGE request; and
 - b) shall set the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request to the MCVideo ID of the targeted MCVideo user contained in the application/resource-lists MIME body contained in the received SIP MESSAGE request;
 - 8) if the received SIP MESSAGE request is a "SIP MESSAGE request for group selection change request for controlling MCVideo function":
 - a) if the targeted MCVideo user is not affiliated to the identified MCVideo group and was determined to be eligible to be affiliated with the MCVideo group in step 3) a) i) above, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <anyExt> element an <affiliation-required> element set to a value of "true";
 - 9) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated with the targeted MCVideo user;
- NOTE: How the controlling MCVideo function finds the address of the terminating MCVideo participating function is out of the scope of the current release.
- 10) shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
 - 11) shall copy the public user identity of the calling MCVideo user from the P-Asserted-Identity header field of the incoming SIP MESSAGE request into the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and
 - 12) shall send the SIP MESSAGE request according to according to rules and procedures of 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the controlling MCVideo function shall generate a SIP 200 (OK) response and forward the SIP 200 (OK) response to the originating participating MCVideo function.

..."

6.1.4.1.3 Test description

6.1.4.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) are affiliated to the Prearranged group.
- The IUT (MCVideo Server) is the controlling server of the Prearranged group.

6.1.4.1.3.2 Test procedure sequence

Table 6.1.4.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the SS-UE1 (MCVideo Client) request to change the selected group of user B to group A for SS-UE2 (MCVideo Client).	-	-	-	-
2	Check: Does the MCVideo Server correctly perform procedure 'MCX E2E SIP MESSAGE' as described in Table A.2.10.3-1 to change the selected group of targeted user B, in the SS-UE2 (MCVideo Client), to group A?	-	-	1	P
3	Check: Does the MCVideo Server correctly perform procedure 'MCX E2E SIP MESSAGE' as described in Table A.2.10.3-1 to notify SS-UE1 (MCVideo Client) about the successful change of the selected group A in the SS-UE2 (MCVideo Client)? (See note)	-	-	1	P

NOTE: During this procedure the SS-UE1 performs the role of SS-UE2 and viceversa.

6.1.4.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

**Table 6.1.4.1.3.3-1: SIP MESSAGE from the SS-UE1
(Step 2, Table 6.1.4.1.3.2-1; Step 1, Table A.2.10.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1 with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause F.1	
MIME-part-body	MCVideo-Info as described in Table 6.1.4.1.3.3-2			
MIME body part		Resource-lists		
MIME-part-body	Resource-lists as described in Table 6.1.4.1.3.3-3			

Table 6.1.4.1.3.3-2: MCVideo-Info in SIP MESSAGE (Table 6.1.4.1.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo- request-uri> with mcvideoURI set to px MCVideo Group A ID	The MCVideo group identity to be selected by the targeted MCVideo user	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.2.1	
anyExt				
request-type	"group-selection-change- request"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.2.1	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table 6.1.4.1.3.3-3: Resource lists in SIP MESSAGE (Table 6.1.4.1.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.3.1-1				
Information Element	Value/remark	Comment	Reference	Condition
resource-lists				
list				
entry[1]				
uri attribute	px_MCVideo_ID_User_B	The targeted MCVideo user	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.2.1	

**Table 6.1.4.1.3.3-4: SIP MESSAGE from the IUT (MCVideo Server) to SS-UE2
(Step 2, Table 6.1.4.1.3.2-1; Step 2, Table A.2.10.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, with condition MCVIDEO and 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 6.1.4.1.3.3-5			

Table 6.1.4.1.3.3-5: MCVideo-Info in SIP MESSAGE (Table 6.1.4.1.3.3-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_B		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.4	
mcvideo-calling-user-id	Encrypted (note) <mcvideo-calling-user-id> with mcvideoURI set to px_MCVideo_ID_User_A			
mcvideo-calling-group-id	Encrypted (note) <mcvideo-calling-group-id> with mcvideoURI set to px_MCVideo_Group_A_ID			
anyExt				
request-type	"group-selection-change-request"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.2.1	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

Table 6.1.4.1.3.3-6: SIP MESSAGE from the SS-UE2 (Step 3, Table 6.1.4.1.3.2-1; Step 1, Table A.2.10.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1 with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause F.1	
MIME-part-body	MCVideo-Info as described in Table 6.1.4.1.3.3-7			
MIME body part		Resource-lists		
MIME-part-body	Resource-lists as described in Table 6.1.4.1.3.3-8			

Table 6.1.4.1.3.3-7: MCVideo-Info in SIP MESSAGE (Table 6.1.4.1.3.3-6)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_Group_A_ID		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.2.2	
anyExt				
response-type	"group-selection-change-response"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.2.2	
selected-group-change-outcome	"success"			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table 6.1.4.1.3.3-8: Resource lists in SIP MESSAGE (Table 6.1.4.1.3.3-6)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.3.1-1				
Information Element	Value/remark	Comment	Reference	Condition
resource-lists				
list				
entry[1]				
uri attribute	px_MCVideo_ID_User_A	The targeted MCVideo user	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.2.2	

Table 6.1.4.1.3.3-9: SIP MESSAGE from the IUT (MCVideo Server) to SS-UE1 (Step 3, Table 6.1.4.1.3.2-1; Step 2, Table A.2.10.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, with condition MCVIDEO and 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 6.1.4.1.3.3-10			

Table 6.1.4.1.3.3-10: MCVideo-Info in SIP MESSAGE (Table 6.1.4.1.3.3-9)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.4	
mcvideo-calling-user-id	Encrypted (note) <mcvideo-calling-user-id> with mcvideoURI set to px_MCVideo_ID_User_B			
mcvideo-calling-group-id	Encrypted (note) <mcvideo-calling-group-id> with mcvideoURI set to px_MCVideo_Group_A_ID			
anyExt				
response-type	"group-selection-change-response"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 9.2.4.4	
selected-group-change-outcome	"success"			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

6.2 Private Calls

6.2.1 MCVideo Server - MCVideo Client / Private Call / On-demand / Automatic Commencement Mode / With Transmission Control / Upgrade to Emergency Call / Cancellation of Emergency on User request

6.2.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 and having registered the clients}
ensure that {
  when { the SS-UE1 (MCVideo Client) initiates a private call with automatic commencement mode and
implicit transmission control request }
  then { IUT (MCVideo Server) accepts the call from the initiator and establishes the call with
SS-UE2 (MCVideo Client) and sends transmission granted to the SS-UE1 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having established an MCVideo On-demand Private Call with Automatic
Commencement Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) requests the end of transmission control }
  then { IUT (MCVideo Server) sends transmission idle to the SS-UE1 (MCVideo Client) and sends
transmission idle to SS-UE2 (MCVideo Client) }
}
```

(3)

```
with { IUT (MCVideo Server) having established an MCVideo On-demand Private Call with Automatic
Commencement Mode and implicit transmission control request }
ensure that {
  when { the SS-UE1 (MCVideo Client) upgrades the call to emergency private call with implicit
transmission control }
  then { IUT (MCVideo Server) accepts the upgrade from the initiator and updates the call for SS-
UE2 (MCVideo Client) and sends transmission granted to the SS-UE1 (MCVideo Client) }
}
```

(4)

```
with { IUT (MCVideo Server) having established an MCVideo On-demand Private Call with Automatic
Commencement Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) downgrades the call to a normal private call }
  then { IUT (MCVideo Server) accepts the downgrade from the initiator and updates the call for
SS-UE2 (MCVideo Client) }
}
```

(5)

```
with { IUT (MCVideo Server) having established an MCVideo On-demand Private Call with
Automatic Commencement Mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) ends the Private call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to SS-UE2 (MCVideo Client) }
}
```

6.2.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 10.2.2.3.1.1, 10.2.2.3.1.3, 10.2.2.3.2, 10.2.2.3.3, 10.2.2.4.1, 10.2.2.4.2, 10.2.2.4.3, 10.2.2.4.4, 10.2.2.4.5, 10.2.2.4.6, 10.2.4.2.1.1, 10.2.4.2.2.1, 10.2.4.3.1, and ETSI TS 124 581 [9] (3GPP TS 24.581), clauses 6.3.2.2, 6.4.2, 6.4.3, 6.4.4. Unless otherwise stated, these are Rel-14 requirements.

[ETSI TS 124 281 [8] (3GPP 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:

...

- 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 clause 7.3.

...

- 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;

...

- 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 ..., 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 ... 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 ...

- 13) shall generate a SIP INVITE request as specified in clause 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 clause 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 clause 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;

...

- 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 clause 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 clause 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 clause 6.3.2.1.5.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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]."

[ETSI TS 124 281 [8] (3GPP 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 MCVideo private call session the participating MCVideo 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;*

...

- 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 2: The MCVideo 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 MCVideo 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;*

...

- 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.3.2]

"This clause covers both on demand session and pre-established session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

...

- 2) shall check the presence of the isfocus media feature tag in the URI of the Contact header field ...

...

- 4) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;

...

- 7) shall perform the automatic commencement procedures specified in clause 6.3.2.2.5.1 and according to IETF RFC 5373 [27] if one of the following conditions are met:
 - a) "SIP INVITE request for terminating participating MCVideo function" contains an Answer-Mode header field with the value "Auto";
 - b) "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; or
 - c) "SIP INVITE request for terminating participating MCVideo function" contains a Priv-Answer-Mode header field with the value "Auto"; and

..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.3.3]

"This clause covers the on-demand session case only.

Upon receipt of a SIP re-INVITE request for an existing MCVideo private call session the participating MCVideo function:

...

- 2) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP re-INVITE request to retrieve the binding between the MCVideo ID and public user identity;

...

- 4) shall generate a SIP re-INVITE as specified in clause 6.3.2.2.10;

NOTE 2: As this is the modification of an in-progress MCVideo private call, this procedure does not attempt modification of the existing answer-mode of the call.

- 5) shall include in the SIP re-INVITE request an SDP offer containing the current media parameters used by the existing session; and
- 6) shall send the SIP re-INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving the SIP 200 (OK) response to the SIP re-INVITE request, the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as described in the clause 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 clause 6.3.2.2.2.1;

- 3) shall copy the P-Asserted-Identity header field from the incoming SIP 200 (OK) response to the outgoing SIP 200 (OK) response;
- 4) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 5) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

The participating MCVideo function shall forward any other SIP response that does not contain SDP along the signalling path to the originating network according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.4.1]

"This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 10.2.2.4.2

The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;

NOTE 1: As a result of calling clause 6.3.3.1.2, the <mcvideo-calling-user-id> containing the calling user's MCVideo ID is copied into the outgoing SIP INVITE.

- 2) if the received SIP INVITE request contains an authorised request for an MCVideo emergency private call as determined by clause 6.3.3.1.13.2:
 - a) shall 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 request contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 6.3.3.1.12; and
 - c) if the received SIP INVITE request did not contain an alert indication or contains an alert indication set to a value of "true" and is not an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";
- 3) shall copy the MCVideo ID of the MCVideo user listed in the MIME resources body of the incoming SIP INVITE request, into the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;
- 4) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited;

NOTE 2: How the controlling MCVideo function finds the address of the terminating MCVideo participating function is out of the scope of the current release.

NOTE 3: If the terminating MCVideo user is part of a partner MCVideo system, then the public service identity can identify an entry point in the partner network that is able to identify the terminating participating MCVideo function.

- 5) shall copy the public user identity of the calling MCVideo user from the P-Asserted-Identity header field of the incoming SIP INVITE request into the P-Asserted-Identity header field of the SIP INVITE request;
- 6) shall include a Resource-Priority header field populated with the values for an MCVideo emergency private call as specified in clause 6.3.3.1.19, if either of the following conditions is met:
 - a) if the received SIP INVITE request contains an authorised request for an MCVideo emergency private call as determined in step 2 above; or
 - b) the originating MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;
- 7) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;

- 8) shall send the SIP INVITE request towards the core network according to 3GPP TS 24.229 [11]; and
- 9) shall start a private call timer with a value set to the configured max private call duration for the user.

Upon receiving SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall cache the contact received in the Contact header field; and
- 2) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon expiry of the private call timer, the controlling MCVideo function shall follow the procedure for releasing private call session as specified in clause 10.2.5.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.4.2]

"In the procedures in this clause:

- 1) <emergency-ind> refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
- 2) <alert-ind> refers to the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 3) <session-type> refers to the <session-type> element of an application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of:

- a "SIP INVITE request for controlling MCVideo function of a private call"; or

the controlling MCVideo function:

- 1) if the <session-type> in the SIP INVITE request is set to "private":
 - a) shall check whether the public service identity contained in the Request-URI is allocated for private call and perform the actions specified in clause 6.3.7.1 if it is not allocated and skip the rest of the steps; and
 - b) shall perform actions to verify the MCVideo ID of the inviting MCVideo user in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request, and authorise the request according to local policy, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps;
- 2) if the incoming SIP INVITE request does not contain an application/resource-lists MIME body shall reject the SIP INVITE request ... and shall not continue with the rest of the steps;
- 3) if the <session-type> is set to "private" and the application/resource-lists MIME body contains more than one <entry> element, shall reject the "SIP INVITE request for originating participating MCVideo function" ..., and shall not continue with the rest of the steps;
- 4) shall validate that the received SDP offer includes at least one media stream for which the media parameters and at least one codec or media format is acceptable by the controlling MCVideo function and if not, reject the request ... and skip the rest of the steps;
- 5) if received SIP INVITE request includes an <emergency-ind>, shall validate the request as described in clause 6.3.3.1.17;
- ...
- 7) if a Resource-Priority header field is included in the received SIP INVITE request and if the Resource-Priority header field is set to the value indicated for emergency calls, shall reject the SIP INVITE request ... and skip the remaining steps if neither one of the following conditions are true:
 - a) the SIP INVITE request does not contain an authorised request for an MCVideo emergency call as determined in step 4 above; or
 - b) the originating MCVideo user is not in an in-progress emergency private call state with the targeted MCVideo user;

- 8) if:
 - a) the received SIP INVITE request contains an emergency indication set to a value of "true";
 - b) the originating MCVideo user is not in an in-progress emergency private call state with the targeted MCVideo user; and
 - c) if the <session-type> in the SIP INVITE request is set to "private";
 then:
 - a) shall cache the information that the MCVideo user has initiated an MCVideo emergency private call to the targeted user; and
 - b) shall cache the information that the MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;
- 9) shall perform actions as described in clause 6.3.3.2.2;
- 10) shall allocate an MCVideo session identity for the MCVideo session; and
- 11) shall invite the MCVideo user(s) listed in the MIME resource-lists body of received SIP INVITE request as specified in clause 10.2.2.4.1.

Upon receiving a SIP 180 (Ringing) response and if the SIP 180 (Ringing) response or the SIP final response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

- 1) if the SIP 180 (Ringing) response is associated with a SIP INVITE that contained a <session-type> set to "private", shall generate a SIP 180 (Ringing) response to the SIP INVITE request and send the SIP 180 (Ringing) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11]; and

Upon receiving a SIP 200 (OK) response for the SIP INVITE request, the SIP dialog was established as a result of receiving a SIP INVITE request with a <session-type> element set to the value of "private" and the SIP final response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

- 1) shall generate a SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;
- 2) 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 clause 6.3.3.2.2;

...

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

NOTE 2: Resulting media plane processing is completed before the next step is performed.

- 5) shall send a SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response for the SIP INVITE request, the SIP dialog was established as a result of receiving a SIP INVITE request with a <session-type> element set to the value of "first-to-answer" and the SIP final response has not yet been sent to the inviting MCVideo client the controlling MCVideo function:

- 1) shall generate a SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;
- 2) 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 clause 6.3.3.2.1;
- 3) the received SIP INVITE request contains an emergency indication set to a value of "true":
 - a) shall cache the information that the MCVideo user has initiated an MCVideo emergency private call to the targeted user; and
 - b) shall cache the information that the MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;

...

- 5) shall interact with the media plane as specified in 3GPP TS 24.380 [5];

NOTE 4: Resulting media plane processing is completed before the next step is performed.

- 6) shall send a SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [4];
and
- 7) if not successful in cancelling or terminating SIP dialogs in step 6) above, may repeat the SIP CANCEL and SIP BYE requests.

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, where the SIP 200 (OK) response was sent with a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18.

The controlling 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.4.3]

"In the procedures in this clause:

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

Upon receiving a SIP re-INVITE request with an emergency indication set to a value of "true", the controlling MCVideo function:

- 1) shall validate that the received SDP offer includes at least one media stream for which the media parameters and at least one codec or media format is acceptable by the controlling MCVideo function and if not, reject the request ... and skip the rest of the steps;
- 2) shall validate the request as described in clause 6.3.3.1.17;
- ...
- 4) if a Resource-Priority header field is included in the received SIP re-INVITE request and if the Resource-Priority header field is set to the value indicated for emergency calls, shall reject the SIP re-INVITE request ... and skip the remaining steps if neither of the following conditions are true:
 - a) the SIP re-INVITE request does contains an authorised request for an MCVideo emergency call as determined in step 2 above; or
 - b) the originating MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;
- 5) if the SIP re-INVITE request contains an emergency indication set to a value of "true" and the originating MCVideo user is not in an in-progress emergency private call state with the targeted MCVideo user:
 - a) shall cache the information that the MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user; and
 - b) if the SIP re-INVITE request contains an alert indication set to "true" and this is an authorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall cache the information that the MCVideo user has sent an MCVideo emergency alert to the targeted user; and
- 6) shall send a SIP re-INVITE invite towards the MCVideo user listed in the MIME resource-lists body of received SIP re-INVITE request as specified in clause 11.1.1.4.5.

Upon receiving a SIP 200 (OK) response for the SIP re-INVITE request and if the SIP response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

- 1) shall generate a SIP 200 (OK) response to the SIP re-INVITE request as specified in the clause 6.3.3.2.3 before continuing with the rest of the steps;
- 2) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP re-INVITE request containing the current media parameters used by the existing session;
- ...
- 4) shall interact with the media plane as specified in 3GPP TS 24.380 [5]; and
- 5) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [4].

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 clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18:

The controlling 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 [4]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.4.4]

"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) 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 receiving a SIP re-INVITE request with an emergency indication set to a value of "false", the controlling MCVideo function:

- 1) shall validate that the received SDP offer includes at least one media stream for which the media parameters and at least one codec or media format is acceptable by the controlling MCVideo function and if not, reject the request ... and skip the rest of the steps;
- 2) shall validate the request as described in clause 6.3.3.1.17;
- ...
- 4) shall reject the SIP re-INVITE request ... if a Resource-Priority header field is included in the received SIP re-INVITE request set to the value configured for emergency calls, and skip the remaining steps; and
- 5) if the SIP re-INVITE request contains an authorised request for an MCVideo emergency private call cancellation as determined by clause 6.3.3.1.13.4:
 - a) shall clear the cache of the MCVideo ID of the originator of the MCVideo emergency private call that is no longer in an in-progress emergency private call state with the targeted MCVideo user; and
 - b) if the SIP re-INVITE request contains an alert indication set to "false" and this is an authorised request for an MCVideo emergency alert cancellation meeting the conditions specified in clause 6.3.3.1.13.3:
 - i) if the received SIP re-INVITE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall clear the cache of the MCVideo ID of 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;

- 6) shall send a SIP re-INVITE request towards the MCVideo user listed in the MIME resource-lists body of received SIP re-INVITE request as specified in clause 11.1.1.4.6.

Upon receiving a SIP 200 (OK) response for the SIP re-INVITE request and if the SIP response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

- 1) shall generate a SIP 200 (OK) response to the SIP re-INVITE request as specified in the clause 6.3.3.2.3 before continuing with the rest of the steps;
- 2) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP re-INVITE request as specified in the clause 6.3.3.2.2;
- ...
- 4) shall interact with the media plane as specified in 3GPP TS 24.380 [5]; and
- 5) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [4].

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 clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18.

The controlling 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 [4]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.4.5]

"This clause describes the procedures for sending a re-INVITE request to an MCVideo user in an MCVideo private call for the purpose of upgrading the session to an emergency private call session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 11.1.1.4.3.

The controlling MCVideo function:

- 1) shall generate a SIP re-INVITE request as specified in clause 6.3.3.1.9;
- 2) if the received SIP re-INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing re-INVITE request;
- 3) if the received SIP re-INVITE request contains an authorised request for an MCVideo emergency private call as determined by clause 6.3.3.1.13.2:
 - a) shall 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 request contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 6.3.3.1.12; and
 - c) if the received SIP INVITE request did not contain an alert indication or contains an alert indication set to a value of "true" and is not an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";
- 4) shall include a Resource-Priority header field populated with the values for an MCVideo emergency private call as specified in clause 6.3.3.1.19, if the received SIP re-INVITE request contains an authorised request for an MCVideo emergency private call as determined in step 2 above; and
- 5) shall send the SIP re-INVITE request towards the core network according to 3GPP TS 24.229 [4].

Upon receiving SIP 200 (OK) response for the SIP re-INVITE request the controlling MCVideo function:

- 1) shall cache the contact received in the Contact header field."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.4.6]

"This clause describes the procedures for sending a re-INVITE request to an MCVideo user in an MCVideo emergency private call for the purpose of downgrading the session to a normal priority private call session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 11.1.1.4.4.

The controlling MCVideo function:

- 1) shall generate a SIP re-INVITE request as specified in clause 6.3.3.1.9;
- 2) if the received SIP re-INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing re-INVITE request.
- 3) if the received SIP re-INVITE request contains an authorised request for an MCVideo emergency private call cancellation as determined by clause 6.3.3.1.13.4:
 - a) shall set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";
 - b) if the received SIP INVITE request contains an alert indication set to a value of "false" and this is an authorised request for an MCVideo emergency alert cancellation meeting the conditions specified in clause 6.3.3.1.13.3:
 - i) shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and
 - ii) if the received SIP request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, copy the contents of the received <originated-by> element to an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP re-INVITE request;
 - c) if the received SIP INVITE request contains an alert indication set to a value of "false" and is not an authorised request for an MCVideo emergency alert cancellation meeting the conditions specified in clause 6.3.3.1.13.3, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";
- 4) shall include a Resource-Priority header field populated with the values for a normal MCVideo private call as specified in clause 6.3.3.1.19, if the received SIP re-INVITE request contains an authorised request for an MCVideo emergency private call cancellation as determined in step 3 above; and
- 5) shall send the SIP re-INVITE request towards the core network according to 3GPP TS 24.229 [4].

Upon receiving SIP 200 (OK) response for the SIP re-INVITE request the controlling MCVideo function:

- 1) shall cache the contact received in the Contact header field."

[ETSI TS 124 281 [8] (3GPP 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."

[ETSI TS 124 281 [8] (3GPP 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."

[ETSI TS 124 281 [8] (3GPP 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."

[ETSI TS 124 581 [9] (3GPP 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.

When an MCVideo call is established a new instance of the transmission control server state machine for 'general reception 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 reception 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 rejoin 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 clause 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" fmtp 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."

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or*
 - iii. *the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 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 clause 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 clause 10.2."*

[ETSI TS 124 581 [9] (3GPP 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] clause 14.2.3; or*
 - ii. *the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 14.2.3 in the latest received MBMS bearer listening status report, shall perform actions as specified in clause 10.2."*

[ETSI TS 124 581 [9] (3GPP 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 clause 9.3.2; and
2. in case of an on-demand session, shall release the media resources associated with the session."

6.2.1.3 Test description

6.2.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.

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 SS-UE1 (MCVideo Client) request the establishment of a private call to SS-UE2 (MCVideo Client) with automatic commencement mode and implicit transmission request.	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.1.3-1 to establish a private call with automatic commencement mode and implicit transmission control request according to option b.ii of note in Annex A, Table A.3.1.3-1?	-	-	1	P
3	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	2	P
5	Make the SS-UE1 (MCVideo Client) request upgrade of the call to an emergency private call with implicit transmission request.	-	-	-	-
6	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to upgrade the call to an emergency private call with implicit transmission request according to option b.ii of note in Annex A, Table A.3.1.3-1?	-	-	3	P
7	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
8	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1?	-	-	2	P
9	Make the SS-UE1 (MCVideo Client) request downgrade of the call to a normal private call.	-	-	-	-
10	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying', as described in Annex A, Table A.3.1.3-1 to downgrade the call without implicit transmission request, with option a of note on Table A.3.1.3-1?	-	-	4	P
11	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
12	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	5	P

6.2.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.2.1.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.2.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with condition PRIVATE-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.2.1.3.3-2: SIP INVITE from the IUT (MCVideo Server) (Step 2, Table 6.2.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition PRIVATE-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.2.1.3.3-3: SIP 200 (OK) from the SS-UE2 (Steps 2, 6 and 10 Table 6.2.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-7, with condition PRIVATE-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.2.1.3.3-4: SIP 200 (OK) from the IUT (MCVideo Server) (Steps 2, 6 and 10, Table 6.2.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-9, with condition PRIVATE-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.2.1.3.3-5: SIP re-INVITE from the SS-UE1 (Step 6, Table 6.2.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with conditions PRIVATE-CALL, re_INVITE and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

Table 6.2.1.3.3-6: SIP re-INVITE from the IUT (MCVideo Server) (Step 6, Table 6.2.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition PRIVATE-CALL, re_INVITE and EMERGENCY-CALL.
NOTE: Conditions are also applied to all body parts.

Table 6.2.1.3.3-7: SIP re-INVITE from the SS-UE1 (Step 10, Table 6.2.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with conditions PRIVATE-CALL and re_INVITE.
NOTE: Conditions are also applied to all body parts.

Table 6.2.1.3.3-8: SIP re-INVITE from the IUT (MCVideo Server) (Step 10, Table 6.2.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition PRIVATE-CALL and re_INVITE.
NOTE: Conditions are also applied to all body parts.

Table 6.2.1.3.3-9: Transmission Idle from the IUT (MCVideo Server) (Step 8, Table 6.2.1.3.2-1; Steps 4 and 5, Annex A, Table A.3.8.3-1)

Derivation Path: Annex A, Table A.3.8.4-6 with condition EMERGENCY-CALL.

Table 6.2.1.3.3-10: Transmission Granted from the IUT (MCVideo Server) (Step 6, Table 6.2.1.3.2-1; Step 2a1, Annex A, Table A.3.1.3-1)

Derivation Path: Annex A, Table A.3.1.4-11 (note), with condition EMERGENCY-CALL.
NOTE: Depends on server implementation.

Table 6.2.1.3.3-11: Media Transmission Notification from the IUT (MCVideo Server) (Step 6, Table 6.2.1.3.2-1; Step 3a1, Annex A, Table A.3.1.3-1)

Derivation Path: Annex A, Table A.3.1.4-12 (note), with condition EMERGENCY-CALL.
NOTE: Depends on server implementation.

6.3 Emergency Alert

6.3.1 MCVideo Server - MCVideo Client / Emergency Alert / Cancel Emergency Alert

6.3.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 and having to support emergency alert}
ensure that {
  when { SS-UE1 (MCVideo Client) requests to send an emergency alert by sending a SIP MESSAGE
message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) and sends SIP MESSAGE message to
request an emergency alert for SS-UE1 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having to support emergency alert}
ensure that {
  when { SS-UE1 (MCVideo Client) requests to cancel an emergency alert by sending a SIP MESSAGE
message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) and sends SIP MESSAGE message to cancel
an emergency alert for SS-UE1 (MCVideo Client) }
}
```

6.3.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 11.2.2.1, 11.2.2.2, 11.2.2.3, 11.2.3.1, 11.2.3.2. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 11.2.2.1]

"Upon receipt of a "SIP MESSAGE request for emergency notification for originating participating MCVideo function", the participating MCVideo function:

...

NOTE 1: if the SIP MESSAGE request contains an emergency indication set to a value of "true" or an alert indication set to a value of "true", 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 the public user identity in the P-Asserted-Identity header field of the SIP MESSAGE request, and shall 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 clause 7.3.

3) *if the MCVideo user is not affiliated with the MCVideo group as determined by clause 9.2.2.2.11, shall perform the actions specified in clause 9.2.2.2.12 for implicit affiliation;*

...

NOTE 3: N2 is the total number of MCVideo groups that an MCVideo user can be affiliated to simultaneously as specified in 3GPP TS 23.379 [3].

NOTE 4: As this is a request for MCVideo emergency services, the participating MCVideo function can choose to accept the request.

5) *shall determine the public service identity of the controlling MCVideo function associated with the group identity in the received SIP MESSAGE request;*

6) *shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33];*

- 7) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the controlling MCVideo function associated with the group identified by the <mcvideo-request-uri> element contained in the <mcvideoinfo> element containing the <mcvideo-Params> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the incoming SIP MESSAGE request;
- 8) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 included in the outgoing SIP MESSAGE request;
- 9) shall set the <mcvideo-calling-user-id> element of the <mcvideoinfo> element containing the <mcvideo-Params> element to the MCVideo ID determined in step 2) above;
- 10) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-location-info+xml MIME body as specified in clause F.3 shall copy the contents of the application/vnd.3gpp.mcvideo-location-info+xml MIME body in the received SIP MESSAGE request into an application/vnd.3gpp.mcvideo-location-info+xml MIME body included in the outgoing SIP MESSAGE request;
- 11) shall set the P-Asserted-Identity in the outgoing SIP MESSAGE request to the public user identity in the P-Asserted-Identity header field contained in the received SIP MESSAGE request; and
- 12) shall send the SIP MESSAGE request as specified to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response in response to the SIP MESSAGE request sent in step 10):

- 1) shall generate a SIP 200 (OK) response as specified in 3GPP TS 24.229 [11] with the follow clarifications:
 - a) shall include the public user 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;
- 2) if the procedures of clause 9.2.2.2.12 for implicit affiliation were performed in the present clause, shall complete the implicit affiliation by performing the procedures of clause 9.2.2.2.13; and
- 3) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11].

..."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 11.2.2.2]

"In the procedures in this clause:

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

Upon receipt of a "SIP MESSAGE requests for emergency notification for terminating participating MCVideo function", the participating MCVideo function:

...

- 2) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP MESSAGE request to retrieve the binding between the MCVideo ID and public user identity;

...

- 4) shall generate an outgoing SIP MESSAGE request as specified in clause 6.3.2.2.11; and
- 5) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the participating MCVideo function shall follow the procedures specified in 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 11.2.2.3]

"Upon receipt of a SIP MESSAGE request routed to the terminating participating MCVideo function as a result of initial filter criteria with the Request-URI set to the public service identity of the terminating participating MCVideo function and the SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind-rcvd> element present, the participating MCVideo function:

...

- 2) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP MESSAGE request to retrieve the binding between the MCVideo ID and public user identity;

...

- 4) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33] and:
 - a) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [6] that were received (if any) in the incoming SIP MESSAGE request;
 - b) shall set the Request-URI of the outgoing SIP MESSAGE request to the public user identity associated to the MCVideo ID of the MCVideo user that was in the Request-URI of the incoming SIP MESSAGE request;
 - c) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request; and
 - d) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and
- 5) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the participating MCVideo function shall follow the procedures specified in 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 11.2.3.1]

"Upon receipt of a "SIP MESSAGE request for emergency notification for controlling MCVideo function", the controlling MCVideo function:

...

- 3) 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", shall perform the procedures specified in clause 11.2.3.2 and skip the rest of the steps;
- 4) 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":

...

- b) if the received SIP MESSAGE request is an authorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1:
 - i) if the sending MCVideo user identified by the <mcvideo-calling-user-id> element included in the application/vnd.3gpp.mcvideo-info+xml MIME body is not affiliated with the MCVideo group identified by the <mcvideo-request-uri> element of the MIME body as determined by the procedures of clause 6.3.6:
 - I) shall check if the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined by clause 9.2.2.3.6;

...

- III) if the procedures of clause 9.2.2.3.6 determined the MCVideo user to be eligible to be implicitly affiliated to the MCVideo group shall, perform the implicit affiliation as specified in clause 9.2.2.3.7;
- ii) for each of the other affiliated members of the group:
 - A) generate an outgoing SIP MESSAGE request notification of the MCVideo user's emergency alert indication as specified in clause 6.3.3.1.11 with the clarifications of clause 6.3.3.1.12;
 - B) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-calling-user-id> element set to the value of the <mcvideo-calling-user-id> element in the received SIP MESSAGE request; and
 - C) send the SIP MESSAGE request according to according to rules and procedures of 3GPP TS 24.229 [11];
- iii) shall generate a SIP 200 (OK) response to the received SIP MESSAGE request as specified in 3GPP TS 24.229 [11] with the following clarifications:
 - A) shall cache the information that the MCVideo user has initiated an MCVideo emergency alert;
- iv) shall send the SIP 200 (OK) response to the received SIP MESSAGE according to rules and procedures of 3GPP TS 24.229 [11].
- v) shall generate a SIP MESSAGE request as described in clause 6.3.3.1.20 to indicate successful receipt of an emergency alert, and shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body:
 - A) the <alert-ind> element set to a value of "true";
 - B) the <alert-ind-rcvd> element set to a value of true; and
 - C) the <mcvideo-client-id> element with the MCVideo client ID that was included in the incoming SIP MESSAGE request; and
- vi) shall send the SIP MESSAGE request according to according to rules and procedures of 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the controlling MCVideo function shall follow the procedures specified in 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 11.2.3.2]

"Upon receipt of a "SIP MESSAGE request for emergency notification for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false", the controlling MCVideo function:

- 1) if the received SIP MESSAGE request is an unauthorised request for an MCVideo emergency alert cancellation as specified in clause 6.3.3.1.13.1:

...

- b) and if the received SIP MESSAGE request contains an <emergency-ind> element and is an authorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4 and the in-progress emergency state of the MCVideo group is set to a value of "true":
 - i) shall set the in-progress emergency state of the group to a value of "false";
 - ii) shall clear the cache of the MCVideo ID of the MCVideo user that triggered the setting of the in-progress emergency state of the MCVideo group to "true";

- iii) shall generate SIP re-INVITE requests to the other affiliated and joined members of the MCVideo group as specified in clause 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 24.380 [5];
 - iv) for each of the affiliated but not joined members of the group shall:
 - A) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency call as specified in clause 6.3.3.1.11;
 - B) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-calling-user-id> element set to the value of the <mcvideo-calling-user-id> element in the received SIP MESSAGE request; and
 - C) shall include an <emergency-ind> element set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request;
 - v) shall generate a SIP 200 (OK) response to the received SIP MESSAGE request as specified in 3GPP TS 24.229 [11];
 - vi) shall send the SIP 200 (OK) response to the received SIP MESSAGE as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
 - vii) shall generate a SIP MESSAGE request as described in clause 6.3.3.1.20 to indicate successful receipt of the request for emergency alert cancellation
 - viii) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP MESSAGE request:
 - A) the <alert-ind> element set to a value of "true";
 - B) the <alert-ind-rcvd> element set to a value of true;
 - C) the <emergency-ind> element set to a value of "false"; and
 - D) the <mcvideo-client-id> element with the MCVideo client ID that was included in the incoming SIP MESSAGE request; and
 - ix) shall send the SIP MESSAGE request according to according to rules and procedures of 3GPP TS 24.229 [11]; and
- 2) if the received SIP MESSAGE request is an authorised request for an MCVideo emergency alert cancellation as specified in clause 6.3.3.1.13.1:
- a) if the received SIP MESSAGE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency alert;
 - b) if the received SIP MESSAGE 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 MESSAGE request as having an outstanding MCVideo emergency alert;
 - c) if the received SIP MESSAGE request does not contain an <emergency-ind> element or is an unauthorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4, 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 alert as specified in clause 6.3.3.1.11;

- ii) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-calling-user-id> element set to the value of the <mcvideo-calling-user-id> element in the received SIP MESSAGE request;
 - iii) if the received SIP MESSAGE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, copy the contents of the received <originated-by> element to an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request;
 - iv) shall include an <alert-ind> element set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request; and
 - v) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];
- d) if the received SIP MESSAGE request contains an <emergency-ind> element and is an authorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4 and the in-progress emergency state of the MCVideo group is set to a value of "true":
- i) shall set the in-progress emergency state of the group to a value of "false";
 - ii) cache the information that the MCVideo user has cancelled the outstanding in-progress emergency state of the group;
 - iii) shall generate SIP re-INVITES requests to the other affiliated and joined members of the MCVideo group as specified in clause 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 24.380 [5]; and
 - iv) for each of the affiliated but not joined members of the group shall:
 - A) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency call as specified in clause 6.3.3.1.11;
 - B) include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-calling-user-id> element set to the value of the <mcvideo-calling-user-id> element in the received SIP MESSAGE request;
 - C) if the received SIP MESSAGE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, copy the contents of the received <originated-by> element to an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request;
 - D) include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set to a value of "false"; and
 - E) shall include an <emergency-ind> element set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request;
- e) shall generate a SIP 200 (OK) response to the received SIP MESSAGE request as specified in 3GPP TS 24.229 [11];
- f) shall send the SIP 200 (OK) response to the received SIP MESSAGE as specified in 3GPP TS 24.229 [11].
- g) shall generate a SIP MESSAGE request as described in clause 6.3.3.1.20 to indicate successful receipt of the request for emergency alert cancellation;
- h) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body, the <alert-ind> element set to a value of "false" and the <alert-ind-rcvd> set to "true";

- i) shall populate the <mcvideo-client-id> element with the MCVideo client ID that was included in the incoming SIP MESSAGE request;
- j) if the received SIP MESSAGE request contains an <emergency-ind> element of the <mcvideoinfo> element set to a value of "false":
 - A) if this is an authorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4, shall include an <emergency-ind> element set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request; and
 - B) otherwise, if this is an unauthorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4, and the in-progress emergency state of the group is set to a value of "true", shall include an <emergency-ind> element set to a value of "true" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request; and
- k) shall send the SIP MESSAGE request according to according to the rules and procedures of 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the controlling MCVideo function shall follow the procedures specified in 3GPP TS 24.229 [11]."

6.3.1.3 Test description

6.3.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) are affiliated to the Prearranged group.
- The IUT (MCVideo Server) is the controlling server of the Prearranged group.

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 SS-UE1 (MCVideo Client) send an emergency alert to group A.	-	-	-	-
2	Check: Does the MCVideo Server correctly perform 'MCX E2E SIP MESSAGE Request - Accept' as described in Annex A, Table A.2.11.3-1 to send an emergency alert for SS-UE1 (MCVideo Client)?	-	-	1	P
3	Make the SS-UE1 (MCVideo Client) cancel an emergency alert.	-	-	-	-
4	Check: Does the MCVideo Server correctly perform 'MCX E2E SIP MESSAGE Request - Accept' as described in Annex A, Table A.2.11.3-1 to cancel the emergency alert of SS-UE1 (MCVideo Client)?	-	-	2	P

6.3.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.3.1.3.3-1: SIP MESSAGE from the SS-UE1
(Step 2, Table 6.1.1.11.3.2-1; Step 1, Annex A, Table A.2.11.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, with conditions MCVIDEO and LOCATION_REPORT				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause F.1	
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 6.3.1.3.3-3			

Table 6.3.1.3.3-2: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_Group_A_ID		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.1.1	
mcvideo-client-id	Encrypted (note) <mcvideo-client-id> with mcvideoString set to px_MCVideo_Client_A_ID		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.1.1	
alert-ind	Encrypted (note) <alert-ind> with mcvideoBoolean set to true		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.1.1	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table 6.3.1.3.3-3: Location-Info in SIP MESSAGE (Table 6.3.1.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.4.1-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Report				
CurrentLocation				
CurrentCoordinate				
longitude	Encrypted (note) <longitude> with px_MCX_CoordinateLongitude_Client_A value			
latitude	Encrypted (note) <latitude> with px_MCX_CoordinateLatitude_Client_A value			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.4.1-2A.				

Table 6.3.1.3.3-4: SIP MESSAGE from the IUT (MCVideo-Server) to SS-UE1 (Step 2, Table 6.1.1.11.3.2-1; Step 3, Annex A, Table A.2.11.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, with conditions MCVIDEO and 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 6.3.1.3.3-5			

Table 6.3.1.3.3-5: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-user-id	not present		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.1	
alert-ind	Encrypted (note) <alert-ind> with mcvideoBoolean set to true		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.1	
mcvideo-client-id	Encrypted (note) <mcvideo-client-id> with mcvideoString set to the client-id as received from the SS-UE1.		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.1	
alert-ind-rcvd	true		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.1	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

**Table 6.3.1.3.3-6: SIP MESSAGE from the IUT (MCVideo Server) to SS-UE2
(Step 2, Table 6.1.1.11.3.2-1; Step 5, Annex A, Table A.2.11.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, with condition MCVIDEO and 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 6.3.1.3.3-7			
MIME body part		Location-info		
MIME-part-body	Location-info as described in Table 6.3.1.3.3-3			

Table 6.3.1.3.3-7: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-6)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_B		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.2.2	
mcvideo-calling-user-id	Encrypted (note) <mcvideo-calling-user-id> with mcvideoURI set to px_MCVideo_ID_User_A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.1	
mcvideo-calling-group-id	Encrypted (note) <mcvideo-calling-group-id> with mcvideoURI set to px_MCVideo_Group_A_ID			
mc-org	px_MCX_DomainName_Organization_A	Indicates the organization an MCVideo user belongs to	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 6.3.3.1.11	
alert-ind	Encrypted (NOTE 1) <alert-ind> with mcvideoBoolean set to true			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

**Table 6.3.1.3.3-8: SIP MESSAGE from the SS-UE1
(Step 4, Table 6.1.1.11.3.2-1; Step 1, Annex A, Table A.2.11.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause F.1	
MIME-part-body	MCVideo-Info as described in Table 6.3.1.3.3-9			

Table 6.3.1.3.3-9: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-8)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_Group_A_ID		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.1.2	
mcvideo-client-id	Encrypted (note) <mcvideo-client-id> with mcvideoString set to px_MCVideo_Client_A_ID		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.1.2	
alert-ind	Encrypted (note) <alert-ind> with mcvideoBoolean set to false		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.1.2	

NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.

Table 6.3.1.3.3-10: SIP MESSAGE from the IUT (MCVideo-Server) to SS-UE1 (Step 4, Table 6.1.1.11.3.2-1; Step 3, Annex A, Table A.2.11.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, with conditions MCVIDEO and 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 6.3.1.3.3-11			

Table 6.3.1.3.3-11: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-10)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-calling-user-id	not present		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.2	
emergency-ind	Encrypted (note) <emergency-ind> with mcvideoBoolean set to false		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.2	
alert-ind	Encrypted (note) <alert-ind> with mcvideoBoolean set to false		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.2	
mcvideo-client-id	Encrypted (note) <mcvideo-client-id> with mcvideoString set to the client-id as received from the SS-UE1.		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.2	
alert-ind-rcvd	true		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.2	

NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.

**Table 6.3.1.3.3-12: SIP MESSAGE from the IUT (MCVideo Server) to SS-UE2
(Step 4, Table 6.1.1.11.3.2-1; Step 5, Annex A, Table A.2.11.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1 with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.3.1.3.3-13			

Table 6.3.1.3.3-13: MCVideo-Info in SIP MESSAGE (Table 6.3.1.3.3-12)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_B		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.2.2	
mcvideo-calling-user-id	Encrypted (note) <mcvideo-calling-user-id> with mcvideoURI set to px_MCVideo_ID_User_A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.2	
mcvideo-calling-group-id	Encrypted (note) <mcvideo-calling-group-id> with mcvideoURI set to px_MCVideo_Group_A_ID			
alert-ind	Encrypted (note) <alert-ind> with mcvideoBoolean set to false		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.2	
emergency-ind	Encrypted (note) <emergency-ind> with mcvideoBoolean set to false		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 11.2.3.2	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

6.4 Video Push

6.4.1 MCVideo Server - MCVideo Client / Video push call / One-to-one video push call

6.4.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo client ) initiates a video push call to push a video to the SS-UE2 (MCVideo Client) }
  then { IUT (MCVideo Server) accepts the video push call from initiator and pushes a video to the SS-UE2 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having established a one-to-one video push call }
ensure that {
  when { the SS-UE2 (MCVideo client ) sends receive media request }
  then { IUT (MCVideo Server) responds with transmission control ack to the SS-UE2 (MCVideo client) }
}
```


(3)

```

with { IUT (MCVideo Server) having established a one-to-one video push call }
ensure that {
  when { the SS-UE1 (MCVideo client) ends the video push call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
        call and sends a SIP BYE message to the SS-UE2 (MCVideo Client) }
}

```

6.4.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 13.2.3.1.1, 10.2.2.3.1.1, 13.2.3.1.2, 10.2.2.3.2, 13.2.3.1.3, 13.2.3.2.1, 10.2.2.4.1, 13.2.3.2.2, 10.2.5.4. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 13.2.3.1.1]

"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 "one-to-one video push", the participating MCVideo function shall perform the procedures of clause 10.2.2.3.1.1."

[ETSI TS 124 281 [8] (3GPP 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:

...

- 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 clause 7.3.

...

- 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;

...

- 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 clause 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 clause 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 clause 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;
 - ...
 - 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 clause 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 clause 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 clause 6.3.2.1.5.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 13.2.3.1.2]

"Upon receipt of a "SIP INVITE request for terminating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video push", the participating MCVideo function shall perform the procedures of clause 10.2.2.3.2."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.3.2]

"This clause covers both on demand session and pre-established session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

...

- 2) shall check the presence of the isfocus media feature tag in the URI of the Contact header field ...

...

- 4) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;

...

- 7) shall perform the automatic commencement procedures specified in clause 6.3.2.2.5.1 and according to IETF RFC 5373 [27] if one of the following conditions are met:

- a) "SIP INVITE request for terminating participating MCVideo function" contains an Answer-Mode header field with the value "Auto";
- b) "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; or
- c) "SIP INVITE request for terminating participating MCVideo function" contains a Priv-Answer-Mode header field with the value "Auto"; and

- 8) shall perform the manual commencement procedures specified in clause 6.3.2.2.6.1 and according to IETF RFC 5373 [27] if either of the following conditions are met:

- a) "SIP INVITE request for terminating participating MCVideo function" contains an Answer-Mode header field with the value "Manual";
- b) "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "manual-answer"; or
- c) "SIP INVITE request for terminating participating MCVideo function" contains a Priv-Answer-Mode header field with the value "Manual".

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 13.2.3.1.3]

"Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.5."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 13.2.3.2.1]

"Upon receipt of a "SIP INVITE request for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video push", the controlling MCVideo function:

- 1) shall check whether the public service identity contained in the Request-URI is allocated for one-to-one video push call and perform the actions specified in clause 6.3.7.1 if it is not allocated and skip the rest of the steps;
- 2) shall check whether the MCVideo ID of the MCVideo calling user in the <mcvideo-calling-user-id> is authorised to initiate the one-to-one video push call...
- 3) shall check whether the MCVideo ID of the MCVideo called party user in the <mcvideo-called-party-id> is authorised to receive the one-to-one video push call, ...
- 4) shall allocate an MCVideo session identity for the MCVideo session; and
- 5) shall invite the MCVideo user listed in the MIME resource-lists body of received SIP INVITE request as specified in clause 10.2.2.4.1."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.4.1]

"This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 10.2.2.4.2

The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;

NOTE 1: As a result of calling clause 6.3.3.1.2, the <mcvideo-calling-user-id> containing the calling user's MCVideo ID is copied into the outgoing SIP INVITE.

- 2) if the received SIP INVITE request contains an authorised request for an MCVideo emergency private call as determined by clause 6.3.3.1.13.2:
 - a) shall 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 request contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 6.3.3.1.12; and
 - c) if the received SIP INVITE request did not contain an alert indication or contains an alert indication set to a value of "true" and is not an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";
- 3) shall copy the MCVideo ID of the MCVideo user listed in the MIME resources body of the incoming SIP INVITE request, into the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;
- 4) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited;

NOTE 2: How the controlling MCVideo function finds the address of the terminating MCVideo participating function is out of the scope of the current release.

NOTE 3: If the terminating MCVideo user is part of a partner MCVideo system, then the public service identity can identify an entry point in the partner network that is able to identify the terminating participating MCVideo function.

- 5) shall copy the public user identity of the calling MCVideo user from the P-Asserted-Identity header field of the incoming SIP INVITE request into the P-Asserted-Identity header field of the SIP INVITE request;

- 6) shall include a Resource-Priority header field populated with the values for an MCVideo emergency private call as specified in clause 6.3.3.1.19, if either of the following conditions is met:
 - a) if the received SIP INVITE request contains an authorised request for an MCVideo emergency private call as determined in step 2 above; or
 - b) the originating MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;
- 7) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;
- 8) shall send the SIP INVITE request towards the core network according to 3GPP TS 24.229 [11]; and
- 9) shall start a private call timer with a value set to the configured max private call duration for the user.

Upon receiving SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall cache the contact received in the Contact header field; and
- 2) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon expiry of the private call timer, the controlling MCVideo function shall follow the procedure for releasing private call session as specified in clause 10.2.5.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 13.2.3.2.2]

"When the MCVideo session for one-to-one video push call needs to be released, the controlling MCVideo function shall perform the procedures of clause 10.2.5.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.5.4]

"When the MCVideo session for private call needs to be released as specified in clause 6.3.8.2, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.5."

6.4.1.3 Test description

6.4.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- SS-UE1 (MCVideo Client) has a pre-recorded video that is available to push to another client.
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.

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	The SS-UE1 (MCVideo Client) requests the establishment of a video push call to push a video to SS-UE2 (MCVideo Client).	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.1.3-1 to push a video to SS-UE2 with implicit transmission control request according to option b.i of note in Annex A, Table A.3.1.3-1?	-	-	1	P
3	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Media Reception Request and Response' as described in Annex A, Table A.3.9.3-1 to start receiving media from SS-UE1 (MCVideo Client), in SS-UE2 (MCVideo Client)?	-	-	2	P
4	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
5	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	3	P

6.4.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications:

Table 6.4.1.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.4.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with condition PRIVATE-CALL. NOTE 1: Condition is also applied to all body parts.				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Annex A, Table A.3.1.4-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.4.1.3.3-2			

Table 6.4.1.3.3-2: MCVideo-Info in SIP INVITE (Table 6.4.1.3.3-1)

Derivation Path: Annex A, Table A.3.1.4-3, with condition PRIVATE-CALL.				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"one-to-one video push"			

Table 6.4.1.3.3-3: SIP INVITE from the IUT (MCVideo Server) (Step 2, Table 6.4.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition PRIVATE-CALL. NOTE 1: Condition is also applied to all body parts.				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Annex A, Table A.3.1.4-5			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.4.1.3.3-4			

Table 6.4.1.3.3-4: MCVideo-Info in SIP INVITE (Table 6.4.1.3.3-3)

Derivation Path: Annex A, Table A.3.1.4-6				
Information Element	Value/remark	Comment	Reference	Condition
Mcvideoinfo				
mcvideo-Params				
session-type	"one-to-one video push"			

Table 6.4.1.3.3-5: SIP 200 (OK) from the SS-UE2 (Step 2 Table 6.4.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-7, with condition PRIVATE-CALL.				
NOTE: Condition is also applied to all body parts.				

Table 6.4.1.3.3-6: SIP 200 (OK) from the IUT (MCVideo Server) (Step 2, Table 6.4.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-9, with condition PRIVATE-CALL.				
NOTE: Condition is also applied to all body parts.				

6.4.2 MCVideo Server - MCVideo Client / Video push call / One-to-server video push call

6.4.2.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo client ) initiates a video push call to push a video to the IUT
(MCVideo Server) }
    then { IUT (MCVideo Server) responds with optional SIP 100 Trying and mandatory 200 (OK) message
}
}
```

(2)

```
with IUT (MCVideo Server) having established a one-to-server video push call }
ensure that {
  when { the SS-UE1 (MCVideo client ) requests session establishment of video with automatic
commencement mode and implicit transmission control to the IUT (MCVideo Server)}
    then { IUT (MCVideo Server) sends SIP INFO with push-url element to the SS-UE1 (MCVideo client)
}
}
```

(3)

```

with { IUT (MCVideo Server) having established a one-to-server video push call }
ensure that {
  when { the SS-UE1 (MCVideo client) ends the video push call by sending a SIP BYE message to the
    IUT (MCVideo Server) }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the SS-UE1 (MCVideo
    client) }
}

```

6.4.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 13.2.3.1.4, 10.2.2.3.1.1, 13.2.3.1.5, 13.2.3.2.3, 10.2.2.4.1, 13.2.3.2.4, 10.2.5.4. Unless otherwise stated, these are Rel-16 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 13.2.3.1.4]

"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 "one-to-server video push", the participating MCVideo function shall perform the procedures of clause 10.2.2.3.1.1, with the following clarifications:

- 1) *shall not check the <allow-private-call> element of the <ruleset> element; and*
- 2) *shall use the automatic commencement mode."*

[ETSI TS 124 281 [8] (3GPP 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:

...

- 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 clause 7.3.

...

- 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;*

...

- 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 clause 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 clause 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 clause 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;
 - ...
 - 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 clause 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 clause 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 clause 6.3.2.1.5.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 13.2.3.1.5]

"Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.5."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 13.2.3.2.3]

"Upon receipt of a "SIP INVITE request for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-server video push", the controlling MCVideo function:

- 1) shall check whether the public service identity contained in the Request-URI is allocated for one-to-server video push call and perform the actions specified in clause 6.3.7.1 ...
- 2) shall check whether the MCVideo ID of the MCVideo calling user in the <mcvideo-calling-user-id> is authorised to initiate the one-to-server video push call, ...
- 3) shall allocate an MCVideo session identity for the MCVideo session;
- 4) shall generate and send a SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11]; and
- 5) shall save the MCVideo media stream to a file.

To send the URL of the file where the MCVideo media stream will be recorded, the controlling MCVideo function:

- 1) shall generate a SIP INFO request according to rules and procedures of 3GPP TS 24.229 [11] and IETF RFC 6086 [21];
- 2) shall include the Info-Package header field set to g.3gpp.mcvideo-info in the SIP INFO request;
- 3) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <video-push-url> element set to the URL of the file where the MCVideo media stream will be recorded; and
- 4) shall send the SIP INFO request towards the inviting MCVideo client in the dialog of a SIP request for one-to-server video push call, as specified in 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.4.1]

"This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 10.2.2.4.2

The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;

NOTE 1: As a result of calling clause 6.3.3.1.2, the <mcvideo-calling-user-id> containing the calling user's MCVideo ID is copied into the outgoing SIP INVITE.

- 2) if the received SIP INVITE request contains an authorised request for an MCVideo emergency private call as determined by clause 6.3.3.1.13.2:
 - a) shall 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 request contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 6.3.3.1.12; and
 - c) if the received SIP INVITE request did not contain an alert indication or contains an alert indication set to a value of "true" and is not an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";
- 3) shall copy the MCVideo ID of the MCVideo user listed in the MIME resources body of the incoming SIP INVITE request, into the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;
 - 4) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited;

NOTE 2: How the controlling MCVideo function finds the address of the terminating MCVideo participating function is out of the scope of the current release.

NOTE 3: If the terminating MCVideo user is part of a partner MCVideo system, then the public service identity can identify an entry point in the partner network that is able to identify the terminating participating MCVideo function.

- 5) shall copy the public user identity of the calling MCVideo user from the P-Asserted-Identity header field of the incoming SIP INVITE request into the P-Asserted-Identity header field of the SIP INVITE request;
- 6) shall include a Resource-Priority header field populated with the values for an MCVideo emergency private call as specified in clause 6.3.3.1.19, if either of the following conditions is met:
 - a) if the received SIP INVITE request contains an authorised request for an MCVideo emergency private call as determined in step 2 above; or
 - b) the originating MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;
- 7) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;
- 8) shall send the SIP INVITE request towards the core network according to 3GPP TS 24.229 [11]; and
- 9) shall start a private call timer with a value set to the configured max private call duration for the user.

Upon receiving SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall cache the contact received in the Contact header field; and
- 2) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon expiry of the private call timer, the controlling MCVideo function shall follow the procedure for releasing private call session as specified in clause 10.2.5.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 13.2.3.2.4]

"When the MCVideo session for one-to-server video push call needs to be released, the controlling MCVideo function shall perform the procedures of clause 10.2.5.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.5.4]

"When the MCVideo session for private call needs to be released as specified in clause 6.3.8.2, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.5."

6.4.2.3 Test description

6.4.2.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client).
- SS-UE1 (MCVideo Client) has a pre-recorded video that is available to be pushed.
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) performs the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.

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	Make the SS-UE1 (MCVideo Client) request the establishment of a video push call to push a video to the IUT (MCVideo Server).	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Participating Terminated session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.4.3-1 to push a video from the SS-UE1 (MCVideo Client) to the IUT (MCVideo Server), with automatic commencement mode and implicit transmission control request according to option b.i of note in Annex A, Table A.3.4.3-1?	-	-	1	P
3	Check: Does the IUT (MCVideo Server) send a SIP INFO message that contains a video-push-url element?	<--	SIP INFO	2	P
4	The SS-UE1 (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
5	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
6	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated call release' as described in Annex A, Table A.2.15.3-1?	-	-	3	P

6.4.2.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.4.2.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.4.2.3.2-1; Step 1, Annex A, Table A.3.4.3-1; Step 1, Annex A, Table A.2.14.3-1)

Derivation Path: Annex A, Table A.3.4.4-1, with condition PRIVATE-CALL.				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Annex A, Table A.3.1.4-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.4.2.3.3-2			
MIME body part	not present	Resource list		
NOTE: Condition is also applied to all body parts.				

Table 6.4.2.3.3-2: MCVideo-Info in SIP INVITE (Table 6.4.2.3.3-1)

Derivation Path: Annex A, Table A.3.1.4-3, with condition PRIVATE-CALL.				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"one-to-server video push"			

Table 6.4.2.3.3-3: SIP 200 (OK) from the IUT (MCVideo Server) (Step 2, Table 6.4.2.3.2-1; Step 1, Annex A, Table A.3.4.3-1, Step 3, Annex A, Table A.2.14.3-1)

Derivation Path: Annex A, Table A.3.4.4-2, with condition PRIVATE-CALL.				
NOTE: Condition is also applied to all body parts.				

Table 6.4.2.3.3-4: SIP INFO from the IUT (MCVideo Server) (Step 3, Table 6.4.2.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.4-1, with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.4.2.3.3-5			

Table 6.4.2.3.3-5: MCVideo-Info in SIP INFO (Table 6.4.2.3.3-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), 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	any allowed value	set to the URL of the video file located in the IUT (MCVideo Server)	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 13.2.3.2.3	

6.5 Video Pull

6.5.1 MCVideo Server - MCVideo Client / Video pull call / One-to-one video pull call

6.5.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo client ) initiates an one-to-one video pull call without implicit
transmission control }
  then { IUT (MCVideo Server) accepts the video pull call from initiator and pulls a video from
the SS-UE2 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having established an one-to-one video pull call }
ensure that {
  when { the SS-UE2 (MCVideo client) sends the transmission request to the IUT (MCVideo Server) }
  then { IUT (MCVideo Server) sends transmission control ack to the SS-UE2 (MCVideo client) }
}
```

(3)

```
with { IUT (MCVideo Server) having established an one-to-one video pull call }
ensure that {
  when { the SS-UE1 (MCVideo client) sends the receive media request}
  then { IUT (MCVideo Server) sends transmission control ack to the SS-UE1 (MCVideo client) }
}
```

(4)

```
with { IUT (MCVideo Server) having established an one-to-one video pull call }
ensure that {
  when { the SS-UE1 (MCVideo client) ends the video pull call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the SS-UE2 (MCVideo Client) }
}
```

6.5.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 12.2.3.1.1, 10.2.2.3.1.1, 12.2.3.1.2, 10.2.2.3.2, 12.2.3.1.3, 12.2.3.2.2, 12.2.3.2.3, 10.2.5.4. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 12.2.3.1.1]

"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 "one-to-one video pull", the participating MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.3.1.1."

[ETSI TS 124 281 [8] (3GPP 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:

...

- 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 clause 7.3.*

...

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;

...

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 clause 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 clause 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 clause 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;

...

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 clause 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 clause 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 clause 6.3.2.1.5.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 12.2.3.1.2]

"Upon receipt of a "SIP INVITE request for terminating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video pull", the participating MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.3.2."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.3.2]

"This clause covers both on demand session and pre-established session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

...

- 2) shall check the presence of the isfocus media feature tag in the URI of the Contact header field ...

...

- 4) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;

...

- 7) shall perform the automatic commencement procedures specified in clause 6.3.2.2.5.1 and according to IETF RFC 5373 [27] if one of the following conditions are met:

- a) "SIP INVITE request for terminating participating MCVideo function" contains an Answer-Mode header field with the value "Auto";

- b) "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; or
 - c) "SIP INVITE request for terminating participating MCVideo function" contains a Priv-Answer-Mode header field with the value "Auto"; and
- 8) shall perform the manual commencement procedures specified in clause 6.3.2.2.6.1 and according to IETF RFC 5373 [27] if either of the following conditions are met:
- a) "SIP INVITE request for terminating participating MCVideo function" contains an Answer-Mode header field with the value "Manual";
 - b) "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "manual-answer"; or
 - c) "SIP INVITE request for terminating participating MCVideo function" contains a Priv-Answer-Mode header field with the value "Manual".

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 12.2.3.1.3]

"Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.5."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 12.2.3.2.2]

"Upon receipt of a "SIP INVITE request for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video pull", the controlling MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.4.2, with following clarifications:

- 1) shall check whether the MCVideo ID of the MCVideo calling user in the <mcvideo-calling-user-id> is authorised to initiate the one-to-one video pull call, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps; and
- 2) shall check whether the MCVideo ID of the MCVideo called party user in the <mcvideo-called-party-id> is authorised to receive the one-to-one video pull call, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 12.2.3.2.3]

"When the MCVideo session for one-to-one video pull call needs to be released, the controlling MCVideo function shall perform the procedures of the clause 10.2.5.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.5.4]

"When the MCVideo session for private call needs to be released as specified in clause 6.3.8.2, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.5."

6.5.1.3 Test description

6.5.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- SS-UE2 (MCVideo Client) has a pre-recorded video that is available to be pulled from another client.
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.

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	The SS-UE1 (MCVideo Client) requests the establishment of a video pull call to pull a video from SS-UE2 (MCVideo Client).	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.1.3-1 to pull a video from SS-UE2 without implicit transmission control request according to option a of note in Annex A, Table A.3.1.3-1?	-	-	1	P
3	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1 to start transmitting media from SS-UE2? (Note 1)	-	-	2	P
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Media Reception Request and Response' as described in Annex A, Table A.3.9.3-1 to start receiving media from SS-UE2 (MCVideo Client), in SS-UE1 (MCVideo Client)?	-	-	3	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
5	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
6	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	4	P
NOTE 1: 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 (ETSI TS 124 581 [9] (3GPP TS 24.581) clause 6.2.4.4).					
NOTE 2: It is not clear in ETSI TS 124 581 [9] (3GPP TS 24.581) what exactly is meant with "implicit transmit media request" in context of CT call establishment (as stated in ETSI TS 124 281 [8] (3GPP TS 24.281)) and how it shall be handled.					

6.5.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.5.1.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.5.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with condition PRIVATE-CALL.				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Annex A, Table A.3.1.4-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.5.1.3.3-2			
NOTE: Condition is also applied to all body parts.				

Table 6.5.1.3.3-2: MCVideo-Info in SIP INVITE (Table 6.5.1.3.3-1)

Derivation Path: Annex A, Table A.3.1.4-3, with condition PRIVATE-CALL.				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"one-to-one video pull"			

Table 6.5.1.3.3-3: SIP INVITE from the IUT (MCVideo Server) (Step 2, Table 6.5.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition PRIVATE-CALL.				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Annex A, Table A.3.1.4-5			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.5.1.3.3-4			
NOTE: Condition is also applied to all body parts.				

Table 6.5.1.3.3-4: MCVideo-Info in SIP INVITE (Table 6.5.1.3.3-3)

Derivation Path: Annex A, Table A.3.1.4-6				
Information Element	Value/remark	Comment	Reference	Condition
Mcvideoinfo				
mcvideo-Params				
session-type	"one-to-one video pull"			

Table 6.5.1.3.3-5: SIP 200 (OK) from the SS-UE2
(Step 2 Table 6.5.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-7, with condition PRIVATE-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.5.1.3.3-6: SIP 200 (OK) from the IUT (MCVideo Server)
(Step 2, Table 6.5.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-9, with condition PRIVATE-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.5.1.3.3-7: Media Transmission Notification
(Step 3, Table 6.5.1.3.2-1; Step 3b2, Annex A, Table A.3.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.7-1.

Table 6.5.1.3.3-8: Media Transmission Notification
(Step 3, Table 6.5.1.3.2-1; Step 3a3, Annex A, Table A.3.7.3-1)

Derivation Path: Table 6.5.1.3.3-7, with condition ACK.

6.5.2 MCVideo Server - MCVideo Client / Video pull call / One-from-server video pull call

6.5.2.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo client ) initiates an one-from-server video pull call without implicit
transmission control with sending SIP INVITE message }
  then { IUT (MCVideo Server) responds with optional SIP 100 Trying and mandatory 200 (OK) message
}
}
```

(2)

```
with { IUT (MCVideo Server) having established an one-from-server video pull call }
ensure that {
  when { the SS-UE1 (MCVideo client) initiates an one-from-server video pull call without implicit
transmission control }
  then { IUT (MCVideo Server) sends media transmission notification to the SS-UE1 (MCVideo client)
}
}
```

(3)

```

with { IUT (MCVideo Server) having established an one-from-server video pull call }
ensure that {
  when { the SS-UE1 (MCVideo client) sends the receive media request}
  then { IUT (MCVideo Server) sends transmission control ack to the SS-UE1 (MCVideo client) }
}

```

(4)

```

with { IUT (MCVideo Server) having established an one-from-server video pull call }
ensure that {
  when { the SS-UE1 (MCVideo client) ends the video pull call by sending a SIP BYE message to the
  IUT (MCVideo Server) }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the SS-UE1 (MCVideo
  client) }
}

```

6.5.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 12.2.3.1.4, 10.2.2.3.1.1, 12.2.3.1.6, 12.2.3.2.5, 10.2.2.4.2, 12.2.3.2.6, 10.2.5.4. Unless otherwise stated, these are Rel-16 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 12.2.3.1.4]

"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 "one-from-server video pull", the participating MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.3.1.1, with the following clarifications:

- 1) *shall not check the <allow-private-call> element of the <ruleset> element; and*
- 2) *shall use the automatic commencement mode."*

[ETSI TS 124 281 [8] (3GPP 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:

...

- 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 clause 7.3.

...

- 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;*

...

- 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 clause 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 clause 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 clause 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;
 - ...
 - 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 clause 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 clause 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 clause 6.3.2.1.5.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 12.2.3.1.6]

"Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.5."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 12.2.3.2.5]

"Upon receipt of a "SIP INVITE request for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-from-server video pull", the controlling MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.4.2, with following clarifications:

- 1) shall check whether the MCVideo ID of the MCVideo calling user in the <mcvideo-calling-user-id> is authorised to initiate the one-from-server video pull call, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps; and
- 2) shall based on the received URL of the video file contained in <video-pull-url> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to transmit media to the MCVideo client as specified in 3GPP TS 24.380 [5]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.2.4.2]

"In the procedures in this clause:

- 1) <emergency-ind> refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
- 2) <alert-ind> refers to the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 3) <session-type> refers to the <session-type> element of an application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of:

- a "SIP INVITE request for controlling MCVideo function of a private call"; or

the controlling MCVideo function:

- 1) if the <session-type> in the SIP INVITE request is set to "private":
 - a) shall check whether the public service identity contained in the Request-URI is allocated for private call and perform the actions specified in clause 6.3.7.1 if it is not allocated and skip the rest of the steps; and

- b) shall perform actions to verify the MCVideo ID of the inviting MCVideo user in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request, and authorise the request according to local policy, ...

...

- 4) shall validate that the received SDP offer includes at least one media stream for which the media parameters and at least one codec or media format is acceptable by the controlling MCVideo function ...
- 5) if received SIP INVITE request includes an <emergency-ind>, shall validate the request as described in clause 6.3.3.1.17;

...

- 8) if:
 - a) the received SIP INVITE request contains an emergency indication set to a value of "true";
 - b) the originating MCVideo user is not in an in-progress emergency private call state with the targeted MCVideo user; and
 - c) if the <session-type> in the SIP INVITE request is set to "private";
 then:
 - a) shall cache the information that the MCVideo user has initiated an MCVideo emergency private call to the targeted user; and
 - b) shall cache the information that the MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;
- 9) shall perform actions as described in clause 6.3.3.2.2;
- 10) shall allocate an MCVideo session identity for the MCVideo session; and
- 11) shall invite the MCVideo user(s) listed in the MIME resource-lists body of received SIP INVITE request as specified in clause 10.2.2.4.1.

Upon receiving a SIP 180 (Ringing) response and if the SIP 180 (Ringing) response or the SIP final response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

- 1) if the SIP 180 (Ringing) response is associated with a SIP INVITE that contained a <session-type> set to "private", shall generate a SIP 180 (Ringing) response to the SIP INVITE request and send the SIP 180 (Ringing) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11]; and

Upon receiving a SIP 200 (OK) response for the SIP INVITE request, the SIP dialog was established as a result of receiving a SIP INVITE request with a <session-type> element set to the value of "private" and the SIP final response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

- 1) shall generate a SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;
- 2) 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 clause 6.3.3.2.2;
- 3) if the received SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 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 clause 4.4;

NOTE 1: This is the case when the MCVideo user's request for an MCVideo emergency private call was granted but the request for the MCVideo emergency alert was denied.

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

NOTE 2: Resulting media plane processing is completed before the next step is performed.

- 5) shall send a SIP 200 (OK) response towards the inviting 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, where the SIP 200 (OK) response was sent with a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18.

The controlling 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 12.2.3.2.6]

"When the MCVideo session for one-from-server video pull call needs to be released, the controlling MCVideo function shall perform the procedures of the clause 10.2.5.4."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 10.2.5.4]

"When the MCVideo session for private call needs to be released as specified in clause 6.3.8.2, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.5."

6.5.2.3 Test description

6.5.2.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client).
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.
- The IUT (MCVideo Client) has a pre-recorded video that is available to be pulled by using tsc_MCVideo_VSF_URI & "/file-location-1" url.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- The SS-UE1 (MCVideo Client) has been provisioned with the url to pull the video.

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 SS-UE1 (MCVideo Client) request the establishment of a video pull call to pull a video from the IUT (MCVideo Server).	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Participating Terminated session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.4.3-1 to pull a video to the SS-UE1 (MCVideo Client) from the IUT (MCVideo Server), with automatic commencement mode and without implicit transmission control request according to option a of note in Annex A, Table A.3.4.3-1?	-	-	1	P
3	Check: Does the IUT (MCVideo Server) send a Media Transmission Notification message to SS-UE1 (MCVideo Client)?	<--	Media Transmission Notification	2	P
4	IF the Media Transmission Notification message requires acknowledgement, the SS-UE1 (MCVideo Client) sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
5	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Media Reception Request and Response' as described in Annex A, Table A.3.9.3-1 to start receiving media from the IUT (MCVideo Server)?	-	-	3	P
6	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
7	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated call release' as described in Annex A, Table A.2.15.3-1?	-	-	4	P
NOTE: It is not clear in ETSI TS 124 581 [9] (3GPP TS 24.581) which transmission control messages should be exchanged during this procedure.					

6.5.2.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.5.2.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.5.2.3.2-1; Step 1, Annex A, Table A.3.4.3-1; Step 1, Annex A, Table A.2.14.3-1)

Derivation Path: Annex A, Table A.3.4.4-1, with condition PRIVATE-CALL.				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP as described in Annex A, Table A.3.1.4-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.5.2.3.3-2			
MIME body part	not present	Resource list		
NOTE: Condition is also applied to all body parts.				

Table 6.5.2.3.3-2: MCVideo-Info in SIP INVITE (Table 6.5.2.3.3-1)

Derivation Path: Annex A, Table A.3.1.4-3, with condition PRIVATE-CALL.				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"one-from-server video pull"			
video-pull-url	tsc_MCVideo_VSF_U RI & "/file-location-1"	set to the URL of the video file located in the IUT (MCVideo Server)	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 12.2.2.4	

Table 6.5.2.3.3-3: SIP 200 (OK) from the IUT (MCVideo Server) (Step 2, Table 6.5.2.3.2-1; Step 1, Annex A, Table A.3.4.3-1, Step 3, Annex A, Table A.2.14.3-1)

Derivation Path: Annex A, Table A.3.4.4-2, with condition PRIVATE-CALL.				
NOTE: Condition is also applied to all body parts.				

Table 6.5.2.3.3-4: Media Transmission Notification (Step 3, Table 6.5.2.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.7-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.				
Information Element	Value/remark	Comment	Reference	Condition
User Id of the Transmitting User	not present			
Audio SSRC of the Transmitting User	Media/Audio SSRC of IUT (MCVideo Server)	SSRC of the IUT (MCVideo Server) transmitting the media	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.16	
Functional Alias	not present			

Table 6.5.2.3.3-5: Transmission Control Ack (Step 4, Table 6.5.2.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK				

6.6 Ambient Viewing Calls

6.6.1 MCVideo Server - MCVideo Client / Ambient Viewing Call / On-demand / Remotely initiated ambient viewing call / Remotely initiated ambient viewing call release

6.6.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo client ) initiates a remotely initiated ambient call }
  then { IUT (MCVideo Server) accepts the remotely initiated ambient call from initiator and
establishes the call with the SS-UE2 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having established a remotely initiated ambient call }
ensure that {
  when { IUT (MCVideo Server) establishes the call with the SS-UE2 (MCVideo Client) }
  then { IUT (MCVideo Server) sends Transmission Granted to the SS-UE2 (MCVideo client) and sends
Media Transmission Notification to the SS-UE1 (MCVideo client)}
}
```

(3)

```

with { IUT (MCVideo Server) having established a remotely initiated ambient call }
ensure that {
  when { the SS-UE1 (MCVideo client) sends the receive media request}
  then { IUT (MCVideo Server) sends transmission control ack to the SS-UE1 (MCVideo client) }
}

```

(4)

```

with { IUT (MCVideo Server) having established a remotely initiated ambient call }
ensure that {
  when { the SS-UE1 (MCVideo client) ends the video pull call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
call and sends a SIP BYE message to the SS-UE2 (MCVideo Client) }
}

```

6.6.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 15.3.1.1, 15.3.1.2, 10.2.4.2.1.1, 15.3.2.1, 10.2.4.2.2.1, 15.4.1, 15.4.2, 15.4.4. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 15.3.1.1]

"Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo+xml MIME body with the <session-type> element set to a value of "ambient-viewing", the participating MCVideo function:

...

- 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 shall authorise the user;

NOTE: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

...

- 5) shall determine the public service identity of the controlling MCVideo function for the ambient viewing call service associated with the originating user's MCVideo ID identity...
- 6) if the incoming SIP INVITE request does not contain an application/resource-lists MIME body or contains an application/resource-lists MIME body with more than one <entry> element... shall not continue with the rest of the steps;

...

- 8) if the <PrivateCall> element exists in the MCVideo user profile document with one or more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]) and:
 - a) 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
 - b) 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:

- a) ... shall not continue with the rest of the steps;
- 9) shall validate the media parameters and if the MCVideo video 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;
- 10) shall generate a SIP INVITE request as specified in clause 6.3.2.1.3;

- 11) shall set the Request-URI to the public service identity of the controlling MCVideo function hosting the private call service;
- 12) 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;
- 13) if 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" or if no Priv-Answer-Mode header field was received in the incoming SIP INVITE request or a Priv-Answer-Mode header field was received containing a value other than "Auto", shall include the Priv-Answer-Mode header field set to a value of "Auto" in the outgoing SIP INVITE request;
- 14) 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 clause 6.3.2.1.1.1; and
- 15) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 15.3.1.2]

"Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function:

- 1) shall follow the procedures as specified in clause 10.2.4.2.1.1."

[ETSI TS 124 281 [8] (3GPP 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."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 15.3.2.1]

"Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

NOTE: The procedures in the present clause are applicable for both on-demand and pre-established sessions.

...

- 2) shall check the presence of the isfocus media feature tag in the URI of the Contact header ...
- 3) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;
- ...
- 6) shall perform the automatic commencement procedures specified in clause 6.3.2.2.5.1 and according to IETF RFC 5373 [27]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 15.3.2.2]

"Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.2.2.1."

[ETSI TS 124 281 [8] (3GPP 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."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 15.4.1]

"This clause describes the procedures for inviting an MCVideo user to an MCVideo ambient viewing session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 15.4.2.

The controlling MCVideo function:

- 1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;

NOTE 1: As a result of calling clause 6.3.3.1.2, the <mcvideo-calling-user-id> containing the calling user's MCVideo ID is copied into the outgoing SIP INVITE.

- 2) shall copy the MCVideo ID of the MCVideo user listed in the MIME resources body of the incoming SIP INVITE request, into the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;
- 3) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited;

NOTE 2: How the controlling MCVideo function finds the address of the terminating participating MCVideo function is out of the scope of the current release.

NOTE 3: If the terminating MCVideo user is part of a partner MCVideo system, then the public service identity can identify an entry point in the partner network that is able to identify the terminating participating MCVideo function.

- 4) shall copy the public user identity of the calling MCVideo user from the P-Asserted-Identity header field of the incoming SIP INVITE request into the P-Asserted-Identity header field of the SIP INVITE request;
- 5) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;
- 6) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request is set to a value of "local-init", shall include the 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];

NOTE 4: The only case where the terminating user can release the ambient viewing call is when the terminating client is the "viewing MCVideo user";

- 7) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request is set to a value of "remote-init", shall include in the outgoing SIP INVITE request an alert-info header field set to a value of "<file:///dev/null>" according to IETF RFC 3261 [15];
- 8) shall send the SIP INVITE request towards the core network according to 3GPP TS 24.229 [11]; and
- 9) shall start a private call timer with a value set to the configured max private call duration for the user.

Upon receiving SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

- 1) shall cache the contact received in the Contact header field; and
- 2) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon expiry of the private call timer, the controlling MCVideo function shall follow the procedure for releasing the ambient viewing call session as specified in clause 15.4.3 with the clarification that the <release-reason> element included in the SIP BYE request shall be set to "private-call-timer-expiry".

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 15.4.2]

"Upon receiving of a "SIP INVITE request for controlling MCVideo function of an ambient viewing call" the controlling MCVideo function:

- 1) shall check whether the public service identity contained in the Request-URI is allocated for ambient viewing call and perform the actions specified in clause 6.3.7.1 if it is not allocated and skip the rest of the steps;
- 2) shall perform actions to verify the MCVideo ID of the inviting MCVideo user in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request, and authorise the request according to local policy;
- ...
- 4) shall validate that the received SDP offer includes at least one media stream for which the media parameters and at least one codec or media format is acceptable by the controlling MCVideo function ...

- 5) shall perform actions as described in clause 6.3.3.2.2;
- 6) shall allocate an MCVideo session identity for the MCVideo ambient viewing call session; and
- 7) shall invite the MCVideo user listed in the MIME resource-lists body of received SIP INVITE request as specified in clause 15.4.1.

If the procedures of clause 15.4.1 were successful in inviting the MCVideo user listed in the MIME resource-lists body of received SIP INVITE request, the controlling MCVideo function:

- 1) shall generate a SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;
- 2) 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 clause 6.3.3.2.2;
- 3) shall include in the SIP 200 (OK) response the *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];

NOTE: The originator of the ambient viewing call is either the initiator of a "remote-init" ambient viewing type call or the originator of a "local-init" ambient viewing type call. In either case, the originating user is allowed to release the ambient viewing call.

- 4) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 5) shall send a SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11];
- 6) if the *<ambient-viewing-type>* element contained in the *application/vnd.3gpp.mcvideo-info+xml* MIME body in the received SIP INVITE request is set to a value of "remote-init":
 - a) shall cache the MCVideo ID contained in the *<mcvideo-calling-user-id>* element of the received SIP INVITE request as the viewing MCVideo user of the ambient viewing call and cache the MCVideo ID contained in the MIME resource-lists body of the received SIP INVITE request as the viewed-to MCVideo user; and
 - b) shall cache the ambient viewing type of the ambient viewing call as "remote-init"; and
- 7) if the *<ambient-viewing-type>* element contained in the *application/vnd.3gpp.mcvideo-info+xml* MIME body in the received SIP INVITE request is set to a value of "local-init":
 - a) shall cache the MCVideo ID contained in the *<mcvideo-calling-user-id>* element of the received SIP INVITE request as the viewed-to MCVideo user of the ambient viewing call and cache the MCVideo ID contained in the MIME resource-lists body of received SIP INVITE request as the viewing MCVideo user; and
 - b) shall cache the ambient viewing type of the ambient viewing call as "local-init".

...

The controlling 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 15.4.4]

"Upon receipt of a SIP BYE request for an ambient viewing session the controlling MCVideo function:

- 1) shall interact with the media plane as specified in clause 6.3 in 3GPP TS 24.581 [5] for releasing the media plane resource associated with the SIP session towards the MCVideo client;
- 2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11]; and
- 3) shall send the SIP BYE request in the dialog of the other participant in the ambient viewing call according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the sent SIP BYE request the controlling MCVideo function:

- 1) *shall interact with the media plane as specified in clause 6.3 in 3GPP TS 24.581 [5] for releasing media plane resources associated with the SIP session with the MCVideo ambient viewing call participant;*
- 2) *shall generate a SIP 200 (OK) response to the received SIP BYE request and send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11]; and*
- 3) *shall delete the following cached data for the ambient viewing call:*
 - a) *the MCVideo ID of the viewed-to MCVideo user;*
 - b) *the MCVideo ID of the viewing MCVideo user; and*
 - c) *the value of the ambient viewing type."*

6.6.1.3 Test description

6.6.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client).
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.

6.6.1.3.2 Test procedure sequence

Table 6.6.1.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE1 (MCVideo Client) requests the establishment of a remotely initiated ambient listening call to SS-UE2 (MCVideo Client).	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform step 1 of procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.1.3-1 to establish a remotely initiated ambient viewing call with automatic commencement mode and with implicit transmission control request according to option b.ii of note in Annex A, Table A.3.1.3-1? (Note)	-	-	1	P
3	Check: Does the IUT (MCVideo Server) send a Transmission Granted message to SS-UE2 (MCVideo Client)?	<--	Transmission Granted	2	P
4	IF the Transmission Granted message requires acknowledgement, the SS-UE2 (MCVideo Client) sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
5	Check: Does the IUT (MCVideo Server) send a Media Transmission Notification message to SS-UE1 (MCVideo Client)?	<--	Media Transmission Notification	2	P
6	IF the Media Transmission Notification message requires acknowledgement, the SS-UE1 (MCVideo Client) sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
7	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Media Reception Request and Response' as described in Annex A, Table A.3.9.3-1 to start receiving media from SS-UE2 (MCVideo Client) in SS-UE1 (MCVideo Client)?	-	-	3	P
9	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
10	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	4	P
NOTE: According to ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.4, call originator shall include "mc_implicit_request" parameter in the SDP offer.					

6.6.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications:

Table 6.6.1.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.6.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with 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 6.6.1.3.3-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.6.1.3.3-3			

Table 6.6.1.3.3-2: SDP Message in SIP INVITE (Table 6.6.1.3.3-1)

Derivation Path: Annex A, Table A.3.1.4-2, with condition PRIVATE-CALL.				
Information Element	Value/remark	Comment	Reference	Condition
Media description[2]		Media description for video		
media attribute		a=line attribute=recvonly		
recvonly				

Table 6.6.1.3.3-3: MCVideo-Info in SIP INVITE (Table 6.6.1.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), 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 6.6.1.3.3-4: SIP INVITE from the IUT (MCVideo Server) (Step 2, Table 6.6.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with 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 6.6.1.3.3-5			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.6.1.3.3-6			

Table 6.6.1.3.3-5: SDP in SIP INVITE (Table 6.6.1.3.3-4)

Derivation Path: Annex A, Table A.3.1.4-5, with condition PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Media description[2]		Media description for video		
media attribute		a=line attribute=recvonly		
recvonly				

Table 6.6.1.3.3-6: MCVideo-Info in SIP INVITE (Table 6.6.1.3.3-4)

Derivation Path: Annex A, Table A.3.1.4-6				
Information Element	Value/remark	Comment	Reference	Condition
Mcvideoinfo				
mcvideo-Params				
session-type	"ambient-viewing"			
anyExt				
ambient-viewing-type	"remote-init"			

Table 6.6.1.3.3-7: SIP 200 (OK) from the SS-UE2 (Step 2 Table 6.6.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-7

Table 6.6.1.3.3-8: SIP 200 (OK) from the IUT (MCVideo Server) (Step 2, Table 6.6.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-9				
Information Element	Value/remark	Comment	Reference	Condition
Feature-Caps				
fc-value	"+g.3gpp.mcvideo.ambient-viewing-call-release"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 15.4.2	

Table 6.6.1.3.3-9: Transmission Granted (Step 3, Table 6.6.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.1-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Table 6.6.1.3.3-10: Media Transmission Notification (Step 5, Table 6.6.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.7-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Table 6.6.1.3.3-11: Transmission Control Ack (Steps 4 and 6, Table 6.6.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

6.7 Use of MBMS transmission

6.7.1 MCVideo Server - MCVideo Client / MBMS / MBMS Bearer Announcement / MBMS Bearer Viewing Status / Transition to MBMS from Unicast / MBMS Transmission Control / Transition to Unicast from MBMS

6.7.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { the SS-UE1 (MCVideo client ) initiates establishment of a group call with automatic
commencement mode and without implicit transmission control }
  then { IUT (MCVideo Server) accepts the call from the initiator and establishes the call with
the SS-UE2 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { IUT (MCVideo Server) requests to send an MBMS bearer announcement to notify bearer
availability }
  then { IUT (MCVideo Server) sends a SIP MESSAGE message to the SS-UE1 (MCVideo Client) }
}
```

(3)

```
with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { SS-UE1 (MCVideo Client) sends a MBMS bearer listening status report by sending a SIP
MESSAGE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) }
}
```

(4)

```
with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { IUT (MCVideo Server) requests to send an MBMS bearer announcement to notify bearer
availability }
  then { IUT (MCVideo Server) sends a SIP MESSAGE message to the SS-UE2 (MCVideo Client) }
}
```

(5)

```
with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { SS-UE2 (MCVideo Client) sends a MBMS Bearer listening status report to notify listening
general-purpose subchannel by sending a SIP MESSAGE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) }
}
```

(6)

```
with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the transmission control}
  then { IUT (MCVideo Server) sends transmission control ack to the SS-UE1 (MCVideo client) }
}
```

(7)

```
with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { the IUT (MCVideo Server) uses MBMS subchannel for the conversation }
  then { IUT (MCVideo Server) sends map group to bearer message over general purpose MBMS channel
}
}
```

(8)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { SS-UE1 (MCVideo Client) sends a MBMS Bearer listening status report to notify listening to
media and transmission control over MBMS subchannel by sending a SIP MESSAGE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) }
}

```

(9)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { SS-UE2 (MCVideo Client) sends a MBMS Bearer listening status report to notify listening to
media and transmission control over MBMS subchannel by sending a SIP MESSAGE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) }
}

```

(10)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { IUT (MCVideo Server) responds with a SIP 200 (OK) }
  then { IUT (MCVideo Server) sends transmission granted to the SS-UE1 (MCVideo Client) and sends
Media Transmission Notification to the SS-UE2 (MCVideo Client)}
}

```

(11)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { the SS-UE2 (MCVideo client) sends the receive media request }
  then { IUT (MCVideo Server) sends transmission control ack to the SS-UE2 (MCVideo client) }
}

```

(12)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode and using
a MBMS subchannel for the conversation }
ensure that {
  when { IUT (MCVideo Server) requests to set the explicit MuSiK key }
  then { IUT (MCVideo Server) sends a SIP MESSAGE message containing a MuSiK download message to
the SS-UE1 (MCVideo Client) and to the SS-UE2 (MCVideo Client) }
}

```

(13)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode and using
a MBMS subchannel for the conversation }
ensure that {
  when { the SS-UE1 (MCVideo client) requests the end of transmission control }
  then { IUT (MCVideo Server) sends transmission control ack, transmission end response and
transmission end notify to all affiliated users of the group }
}

```

(14)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { IUT (MCVideo Server) stops using MBMS subchannel for the conversation }
  then { IUT (MCVideo Server) sends transmission idle to the SS-UE2 (MCVideo Client) and sends
unmap group to bearer over MBMS subchannel }
}

```

(15)

```

with { IUT (MCVideo Server) having established group call with automatic commencement }
ensure that {
  when { SS-UE1 (MCVideo Client) sends a MBMS Bearer listening status report to stop notify
listening media and transmission control over MBMS subchannel by sending a SIP MESSAGE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) to the SS-UE1 (MCVideo Client) }
}

```

(16)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { SS-UE2 (MCVideo Client) sends a MBMS Bearer listening status report to stop notify
  listening media and transmission control over MBMS subchannel by sending a SIP MESSAGE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) to the SS-UE2 (MCVideo Client) }
}

```

(17)

```

with { IUT (MCVideo Server) having established group call with automatic commencement }
ensure that {
  when { IUT (MCVideo Server) requests to send an MBMS bearer cancellation announcement to notify
  bearer unavailability }
  then { IUT (MCVideo Server) sends a SIP MESSAGE message to the SS-UE1 (MCVideo Client) and to
  the SS-UE2 (MCVideo Client) }
}

```

(18)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { the SS-UE1 (MCVideo Client) sends MBMS bearer listening status report message to IUT
  (MCVideo Server), to notify not being listening to general-purpose subchannel }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) }
}

```

(19)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { the SS-UE2 (MCVideo Client) sends MBMS Bearer listening status report message to IUT
  (MCVideo Server), to notify not being listening to general-purpose subchannel }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) }
}

```

(20)

```

with { IUT (MCVideo Server) having established group call with automatic commencement mode }
ensure that {
  when { the SS-UE1 (MCVideo client) ends the group call }
  then { IUT (MCVideo Server) responds by sending a SIP 200 (OK) message to the client ending the
  call and sends a SIP BYE message to the SS-UE2 (MCVideo Client) }
}

```

6.7.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 16.3.2.1, 16.3.2.2, 16.3.2.3, 16.3.2.4, 16.3.2.5, 16.3.3, 16.3.4, and ETSI TS 124 581 [9] (3GPP TS 24.581), clauses 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.2.4, 4.1.2.5, 6.4.2, 6.4.3, 10.2, 13.3.2, 9.3.1, 9.4.1. Unless otherwise stated, these are Rel-15 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 16.3.2.1]

"The availability of an MBMS bearer is announced to MCVideo clients by means of an MBMS bearer announcement message. One or more MBMS bearer announcement elements are included in an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body.

An MBMS bearer announcement message can contain new MBMS bearer announcements, updated MBMS bearer announcements or cancelled MBMS bearer announcements or a mix of all of them at the same time in an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body. Each initial MBMS bearer announcement message announces one MBMS bearer intended to carry a general purpose MBMS subchannel used for application level multicast signalling in a specified MBMS service area and additionally, the message could also announce zero or more extra MBMS bearers intended to carry media and media control.

NOTE: *A new MBMS bearer announcement does not implicitly remove previously sent MBMS bearer announcements if the previously sent MBMS bearer announcement is not included in an MBMS bearer announcement message. However, the application/sdp MIME body, if included in the new MBMS bearer announcement message, fully replaces the existing application/sdp MIME body (which includes the MSCCK security key used to protect the general purpose MBMS subchannel).*

When and to whom the participating MCVideo function sends the MBMS bearer announcement is based on local policy in the participating MCVideo function.

The following clauses describe how the participating MCVideo function:

1. sends an initial MBMS bearer announcement message;
2. updates a previously sent announcement of MBMS bearer(s);
3. cancels a previously sent announcement of MBMS bearer(s); and
4. keys, re-keys or un-keys MCVideo groups using Multicast Signalling Key (MuSiK) via a key download procedure.

Prior to the participating MCVideo function transmitting on an MBMS bearer, the participating MCVideo function:

1. if necessary, shall instruct the local key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
2. shall generate MSCCK(s) with the corresponding MSCCK-ID(s) and MuSiK(s) with the corresponding MuSiK-ID(s) as necessary; and
3. shall distribute MSCCKs, MSCCK-IDs, MuSiKs and MuSiK-IDs to the MCVideo clients, as needed, using the keying material received from the key management server for security protection, as described in 3GPP TS 33.180 [8]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 16.3.2.2]

"For each MCVideo client that the participating MCVideo function is sending an MBMS bearer announcement to, the participating MCVideo function:

- 1) shall generate an SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];
- 2) shall set the Request-URI to the URI received in the To header field in a third-party SIP REGISTER request;
- 3) 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];
- 4) shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- 5) shall include one application/sdp MIME body conforming to 3GPP TS 24.229 [11] where the application/sdp MIME body and:
 - a) shall include the Content-Disposition header field with the value "render"; and
 - b) if FEC is applied to protect one of the following media lines
 - i) shall include a "a=FEC-declaration" session attribute set to "0", with the the "encoding-id" parameter set to "1", as specified in [67].
 - ii) shall include a "a=FEC-OTI-extension" session attribute, providing the FEC object transmission information, specified in clause 8.2.2.10a in [67].
 - iii) should include an "a=mbms-repair" session attribute, as specified in clause 8.2.2.10a in [67].
 - c) should include one or more "m=video" media lines and media line attributes as defined in 3GPP TS 24.581 [5] to be used as the MBMS subchannel for video. Additional the participating MCVideo function:
 - i) shall set c-line to the unspecified address (0.0.0.0), if IPv4, or to a domain name within the "invalid" DNS top-level domain, if IPv6;
 - ii) shall set port number of the media line to 9;

- iii) if transmission control and media control is multiplexed with video, shall include the "a=rtcp-mux" attribute as specified in IETF RFC 5761 [72]; and shall include the "a=rtcp:9" as specified in IETF RFC 5761 [72].
 - iv) if the declared media is protected by FEC, shall include a "a=FEC" attribute, set to 0.
- d) should include one or more "m=audio" media lines and media line attributes as defined in 3GPP TS 24.581 [5] to be used as the MBMS subchannel for audio. Additionally the participating MCVideo function:
 - i) shall set c-line to the unspecified address (0.0.0.0), if IPv4, or to a domain name within the "invalid" DNS top-level domain, if IPv6;
 - ii) shall set port number of the media line to 9;
 - iii) if media control is multiplexed with audio, shall include the "a=rtcp-mux" attribute as specified in IETF RFC 5761 [72]; and shall include the "a=rtcp:9" as specified in IETF RFC 5761 [72].
 - iv) if the declared media is protected by FEC, shall include a "a=FEC" attribute, set to 0.
- e) if "m=video" media lines to be used in an MBMS subchannel for video without multiplexing transmission control are included above, shall include one or more "m=application" media line as defined in 3GPP TS 24.581 [5] to be used as the MBMS subchannel for transmission control messages. The media line:
 - i) shall set c-line to the unspecified address (0.0.0.0), if IPv4, or to a domain name within the ".invalid" DNS top-level domain, if IPv6; and
 - ii) shall set the port number of the media line to 9;
- f) should include one or more "m=application" media lines and media line attributes as defined in 3GPP TS 24.581 [5] to be used as the MBMS subchannel for FEC repair packets. Additionally the participating MCVideo function:
 - i) shall set c-line to the unspecified address (0.0.0.0), if IPv4, or to a domain name within the "invalid" DNS top-level domain, if IPv6;
 - ii) shall set port number of the media line to 9;
 - iii) shall include a "a=FEC" attribute, set to 0.
- g) shall include one "m=application" media line as defined in clause 4.3.3.1 from 3GPP TS 24.581 [5] to be used as the general purpose MBMS subchannel. The media line shall include a valid multicast IP address and a valid port number. If the protection of MBMS subchannel control messages sent over the general purpose MBMS subchannel of the MBMS bearer is required, the participating MCVideo function also includes an "a=key-mgmt" media-level attribute. The participating MCVideo function:
 - i) shall encrypt the MSCCK to a UID associated to the targeted MCVideo ID and a time related parameter as described in 3GPP TS 33.180 [8];
 - ii) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated MSCCK and MSCCK-ID as specified in 3GPP TS 33.180 [8];
 - iii) shall add the public service identity of the participating MCVideo function to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - iv) shall sign the MIKEY-SAKKE I_MESSAGE using the public service identity of the participating MCVideo function 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
 - v) shall include the "mikey" key management and protocol identifier and the signed MIKEY-SAKKE I_MESSAGE in the value of the a=key-mgmt" media-level attribute according to IETF RFC 4567 [6];

- 6) shall include an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body defined in clause F.2 with the <version> element set to "1" and one or more <announcement> elements associated with the pre-activated MBMS bearers. Each set of an <announcement> element:

a) shall include a TMGI value in the <TMGI> element;

NOTE 4: The same TMGI value can only appear in one <announcement> element. The TMGI value is also used to identify the <announcement> when updating or cancelling the <announcement> element.

NOTE 5: The security key active for the general purpose MBMS subchannel on which the mapping (i.e. the MapGroupToBearer message) of media or media control to this MBMS bearer was indicated, is used for MBMS subchannels on this MBMS bearer, unless a different key or an indication of not using encryption is in place.

b) shall include the QCI value in the <QCI> element;

c) if multiple carriers are supported, shall include the frequency to be used in the <frequency> element;

NOTE 6: In the current release if the <frequency> element is included, the frequency in the <frequency> element is the same as the frequency used for unicast.

d) shall include one or more MBMS service area IDs in <mbms-service-area-id> elements in the <mbms-service-areas> element;

NOTE 7: Initial mappings of groups to MBMS subchannels on an MBMS bearer for the purpose of carrying media or media control can occur only where the MBMS service area for this bearer and the MBMS service area for the bearer carrying the general purpose MBMS subchannel on which the MapGroupToBearer message is sent intersect. However, once media or media control were successfully mapped to this bearer, the reception by the MCVideo client can continue (until UnmapGroupToBearer is received or until timeout) throughout the entire MBMS service area of this bearer.

e) may include the <report-suspension> element and set it to "true" value or the "false" value; and

NOTE 8: The participating function can choose to direct some clients not to send an MBMS bearer suspension report when notified by RAN, by including the <report-suspension> element set to "false". The purpose is to prevent an avalanche of identical reports sent by clients roughly at the same time, to report the suspension of the same MBMS bearer. The way the participation function determines which clients are to send or not to send the report is outside the scope of the present document.

f) if the MBMS bearer is carrying the general purpose MBMS subchannel, shall include one <GPMS>element, giving the number of the "m=application" media line in the application/sdp MIME body generated in step 5 above to be used for the general purpose MBMS subchannel;

- 7) shall include the MBMS public service identity of the participating MCVideo function in the P-Asserted-Identity header field;

- 8) shall include in a MIME body with Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml", the <mcvideo-request-uri> element set to the MCVideo ID of the user; and

- 9) shall send the SIP MESSAGE request towards the MCVideo client according to 3GPP TS 24.229 [11]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 16.3.2.3]

"When the participating MCVideo function wants to update a previously sent announcement, the participating MCVideo function sends an MBMS bearer announcement in a SIP MESSAGE request as specified in clause 16.3.2.2 where the participating MCVideo function in the <announcement> element to be updated:

- 1) shall include the same TMGI value as in the MBMS bearer announcement to be updated in the <TMGI> element;

NOTE 1: TMGI value is used to identify the <announcement> when updating or cancelling the <announcement> element and can't be changed.

- 2) shall include the same or an updated value of the QCI in the <QCI> element;

- 3) if a frequency was included in the previously sent announcement, shall include the same value in the <frequency> element;
- 4) shall include the same list of MBMS service area IDs or an updated list of MBMS service area IDs in the <mbms-service-areas> element;
- 5) may include the same or an updated value in the <report-suspension> element;
- 6) shall include the <GPMS> element with the same value as in the initial <announcement> element; and
- 7) shall include the same application/sdp MIME body as included in the initial MBMS announcement."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 16.3.2.4]

"When the participating MCVideo function wants to cancel an MBMS bearer announcement associated with an <announcement> element, the participating MCVideo function sends an MBMS bearer announcement as specified in clause 16.3.2.2 where the participating MCVideo function in the <announcement> element to be cancelled:

- 1) shall include the same TMGI value as in the <announcement> element to be cancelled in the <TMGI> element;
- 2) shall not include an <mbms-service-areas> element;
- 3) if the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body only contains <announcement> elements that are to be cancelled, shall not include an <GPMS> element; and
- 4) if the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body only contains <announcement> elements that are to be cancelled, shall not include an application/sdp MIME body."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 16.3.2.5]

"For each MCVideo client that the participating MCVideo function is intending to use an MBMS bearer to transmit confidentiality protected transmission control signalling (SRTCP) to the client, the participating MCVideo function shall perform a key download procedure for each Multicast Signalling Key (MuSiK). Two kinds of MuSiK download are possible: default MuSiK download and explicit MuSiK download. The default MuSiK download is used to set, reset or unset a MuSiK and its corresponding MuSiK-ID and is applicable to all groups supported by the MCVideo client, except for certain identified groups for which MuSiKs and MuSiK-IDs are assigned, reassigned or unassigned separately via explicit MuSiK download. The default MuSiK and MuSiK-ID can apply to all the MCVideo clients supported by the participating MCVideo function and can be overridden by the explicit MuSiK download which is selectively applied only to the MCVideo clients using the explicitly identified groups. A group subject to explicit MuSiK download, can be switched to the default MuSiK protection via a default MuSiK download identifying that group. The participating MCVideo function:

- 1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];
- 2) shall set the Request-URI to the URI received in the To header field in a third-party SIP REGISTER request;
- 3) 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];
- 4) shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- 5) shall include an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body defined in clause F.2 with the <version> element set to "1", and either
 - a) containing an <mbms-explicitMuSiK-download> element with at least one <group> element associated with the MuSiK being downloaded; or
 - b) containing an <mbms-defaultMuSiK-download> element with zero or more <group> elements associated with the MuSiK being downloaded;
- 6) if the transmission control signaling for the group(s) in the specified list is to be protected using the MuSiK, shall include an application/mikey MIME body with the MIKEY message containing the encrypted MuSiK and the corresponding MuSiK-ID, constructed as described in clauses 5.8.1 and 5.2.2 of 3GPP TS 33.180 [8];

NOTE: Clause 9.2.1.3 of 3GPP TS 33.180 [8] shows an example on how to include an application/mikey MIME body in a SIP message.

7) shall send the SIP MESSAGE request towards the MCVideo client according to 3GPP TS 24.229 [11].

The participating MCVideo function shall consider the key download successful on receipt of a 200 (OK) message in response to the SIP MESSAGE request sent in step 7).

A participating MCVideo function that does not receive a 200 (OK) message from a specific MCVideo client shall use unicast signalling for transmission control towards that MCVideo client for the groups for which the MuSiK was intended."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 16.3.3]

"Upon receiving a "SIP MESSAGE request for an MBMS listening status update", the participating MCVideo function shall handle the request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17].

If the SIP MESSAGE request contains:

- 1) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body with an <mbms-listening-status> element; and
- 2) an application/vnd.3gpp.mcvideo-info+xml MIME body containing an MCVideo ID in the <mcvideo-request-uri> served by the participating MCVideo function;

then the participating MCVideo function:

- 1) shall verify that the public user identity in the P-Asserted-Identity header field is bound to the MCVideo ID in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, and if that is the case:
 - a) if the <mbms-listening-status> element is set to "listening":
 - i) if <session-identifier> elements are included, shall indicate to the media plane that the MCVideo client in the session identified by the <session-identifier> element is now listening to the MBMS subchannel; and
 - ii) if <general-purpose> element is included with the value "true", shall indicate to the media plane that the MCVideo client is now listening to the general purpose MBMS subchannel; and
 - b) if the <mbms-listening-status> element is set to "not-listening":
 - i) if <session-identifier> elements are included, shall indicate to the media plane that the MCVideo client in the sessions identified by the <session-identifier> elements is not listening to the MBMS subchannel;
 - ii) if <general-purpose> element is included with the value "false", shall indicate to the media plane that the MCVideo client is no longer listening to the general purpose MBMS bearer; and
 - iii) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

NOTE 1: 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".

If the SIP MESSAGE request contains:

- 1) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body with an <mbms-suspension-status> element; and
- 2) an application/vnd.3gpp.mcvideo-info+xml MIME body containing an MCVideo ID in the <mcvideo-request-uri> served by the participating MCVideo function;

then the participating MCVideo function:

- 1) shall verify that the public user identity in the P-Asserted-Identity header field is bound to the MCVideo ID in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, and if that is the case:
 - a) if the <mbms-suspension-status> element is set to "suspending":
 - i) shall consider that the bearer identified by the <suspended-TMGI> element is about to be suspended and that the reduction or elimination of traffic on that bearer and/or on some of the bearers indicated in the <other-TMGI> elements can potentially avoid the suspension; and

NOTE 2: An MBMS bearer is about to be suspended when RAN has notified the clients of the decision to suspend the bearer, but the actual suspension, which would occur at the end of the MCCH modification period, has not taken place yet because the MCCH modification period has not yet expired.

- ii) may take implementation/configuration specific immediate action for the MCVideo client that reports the suspension as well as other MCVideo clients that listen to the same bearer (e.g. moving traffic to unicast bearer(s)), reducing transmission rate, eliminating traffic, modifying pre-emption priority).
- b) if the <mbms-suspension-status> element is set to "not-suspending":
 - i) shall consider that the bearer identified by the <suspended-TMGI> element is no longer about to be suspended; and

NOTE 3: An MBMS bearer is no longer about to be suspended when RAN has notified the clients of the decision to no longer suspend the bearer after having previously notified the clients that the bearer would be suspended at the end of the MCCH modification period. The RAN notifications to first suspend and subsequently not to suspend the same MBMS bearer would have to come within the same MCCH modification period.

- ii) may take implementation/configuration specific immediate action for the MCVideo client that reports the suspension as well as other MCVideo clients that listen to the same bearer (e.g. restoring traffic previously reduced or eliminated from MBMS bearers upon reception of suspension information).

NOTE 4: If the MCVideo client reports that the MCVideo client is no longer listening to MBMS subchannels associated with the MBMS bearer indicated in the suspension information, it is implicitly understood that the suspension of that MBMS bearer has actually occurred."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 4.1.2.1]

"The participating MCVideo function can use an MBMS bearer for the DL transmission of the media and the media control plane.

The participating MCVideo function decides to activate an MBMS bearer. After the activation of the MBMS bearer, as specified in 3GPP TS 29.468 [6], the TMGI of this MBMS bearer is announced to the MCVideo clients in the MBMS service area of this MBMS bearer. This announcement enables the MCPVideo client to listen (decode/demodulate) this MBMS bearer. The activation of an MBMS bearer and the announcement of the TMGI create a pool of MBMS subchannel resources without any association to a group or other purposes.

The criteria for a participating MCPVideo function to decide to activate and use an MBMS bearer is implementation dependent.

An MBMS bearer can be used for the DL transmission for more than one group. For this, additional parameters like destination UDP port are used for enabling the differentiation of messages and packets belonging to different groups over the same MBMS bearer by a receiving MCVideo client.

When a TMGI is announced a general purpose MBMS subchannel is created by defining an association between the identity of the general purpose MBMS subchannel (e.g. 'general purpose') and the TMGI (of the activated and announced MBMS bearer) together with the parameters (e.g. UDP port) differentiating this general purpose MBMS subchannel in this MBMS bearer. The parameters of this general purpose MBMS subchannel can be communicated to the MCVideo clients in the MBMS service area of this MBMS bearer using unicast over-the-air transmission or can be pre-defined and stored in the MCVideo user profile that is downloaded to the MCVideo UE."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 4.1.2.2]

"When a MCVideo transmission starts, the participating MCVideo function can allocate an MBMS subchannel for this group by defining an association between this group (e.g. 'group id') and the TMGI (of the activated and announced MBMS bearer) with the parameters differentiating this MBMS subchannel in this MBMS bearer. The parameters of this MBMS subchannel are sent using the general purpose MBMS subchannel using the Map Group To Bearer message. The Map Group To Bearer message is repeated as long as the communication is ongoing for improving the reception probability and to allow MCVideo clients arriving late to listen to the MBMS subchannel.

The Map Group To Bearer provides the multicast IP destination address and the destination ports used to deliver the transmission control messages, the audio and video media packets, the FEC repair packets."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 4.1.2.3]

"If an MBMS subchannel exists, the participating MCVideo function forwards the media plane control messages, received from the controlling MCVideo function via MBMS subchannel for media plane control. Only transmission control messages which are transmitted to more than one affiliated group member are forwarded to the MBMS bearer (e.g. the Media transmission notification, Transmission Idle and Transmission end notify messages). Transmission control messages can be repeated as long as the transmission is on going for improving the reception probability. The participating MCVideo function forwards the media packets, received from the controlling MCVideo function, via the MBMS subchannel for media.

Amongst all affiliated group members under this participating MCVideo function, the participating MCVideo function is informed or is enabled to deduce the group members which do not or cannot receive the MBMS subchannels. The participating MCVideo function forwards the media packets and the media plane control messages, received from the controlling MCVideo function, to the group members which do not or cannot receive the MBMS subchannels, using unicast bearers allocated for media and media plane control respectively."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 4.1.2.4]

"The participating MCVideo function can de-allocate an MBMS subchannel after a configurable period of silence in the transmission by removing the association to this group by sending the Unmap Group To Bearer message over this MBMS subchannel. The de-allocation of the MBMS subchannel frees the parameters used for differentiating this MBMS subchannel in this MBMS bearer. Therefore, the resources of a de-allocated MBMS subchannel can be reallocated for a transmission of another group.

NOTE: *The participating MCVideo function will activate MBMS bearers with general QoS characteristics suitable for MCVideo service and will map MBMS subchannels for media or media plane control only to MBMS bearers that can provide the QoS required by media or media plane control."*

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 4.1.2.5]

"The participating MCVideo function can activate an MBMS bearer that previously has been announced over a unicast bearer by sending an MBMS bearer announcement over an MBMS bearer. The MCVideo client acknowledges that it can listen to the MBMS bearer by sending a listening status report."

[ETSI TS 124 581 [9] (3GPP 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;*
- ...
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] clause 14.2.3; or*

- iii. the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 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 clause 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 clause 10.2."

[ETSI TS 124 581 [9] (3GPP 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
- ...
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] clause 14.2.3; or
 - ii. the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] clause 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] clause 14.2.3 in the latest received MBMS bearer listening status report, shall perform actions as specified in clause 10.2."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 10.2.1]

"If the participating MCVideo function supports the MBMS subchannel control procedure, the participating MCVideo function shall support the behaviour implied by the state machine specified in this clause. The specifications are on the reception of transmission control messages from the controlling MCVideo function, sending of transmission control messages and the allocation/deallocation of MBMS subchannels for a transmission in a group session.

Figure 10.2.1-1 shows the participating MCVideo function MBMS subchannel control state diagram.

...

If a transmission control message or RTP media packet arrives in a state where there are no procedures specified in the clauses below, the participating MCVideo function shall discard the message.

..."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 13.3.2]

"The participating MCVideo function:

1. *if protection of media is negotiated, shall be transparent to RTP media streams and shall forward encrypted RTP media streams without decrypting the payload;*
2. *if protection of transmission control and reception control messages sent using unicast between the participating MCVideo function and the MCVideo client is negotiated and the CSK and the CSK-ID were received from the MCVideo client using SIP signalling according to 3GPP TS 24.281 [2]:*
 - A) *shall encrypt transmission control and reception control messages sent using unicast to the served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2; and*
 - B) *shall decrypt transmission control and reception control messages received using unicast from the served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2;*
3. *if protection of transmission control messages sent over the MBMS subchannel from the participating MCVideo function to the served MCVideo clients is required and a MuSiK and a MuSiK-ID are associated with the on-network group call of the transmission control messages:*
 - A) *shall encrypt transmission control messages sent over the MBMS subchannel according to IETF RFC 3711 [16] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the MuSiK and MuSiK-ID as specified in clause 13.2;*
- ...
6. *if protection of media control messages sent using unicast between the participating MCVideo function and the MCVideo client is negotiated between the participating MCVideo function and the MCVideo client and the CSK and the CSK-ID were received from the MCVideo client using SIP signalling according to 3GPP TS 24.281 [2];*
 - A) *shall encrypt media control messages sent using unicast to the served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2; and*
 - B) *shall decrypt media control messages received using unicast from the served MCVideo client according to IETF RFC 3711 [4] and 3GPP TS 33.180 [8] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the CSK and CSK-ID as specified in clause 13.2;*
- ...
9. *if protection of MBMS subchannel control messages sent over the general purpose MBMS subchannel of an MBMS bearer is required and the MSCCK and the MSCCK-ID associated with the MBMS bearer were sent to one or more served MCVideo clients using SIP signalling according to 3GPP TS 24.281 [11]:*
 - A) *shall encrypt MBMS subchannel control messages specified in clause 9.3 sent over the general purpose MBMS subchannel of the MBMS bearer according to IETF RFC 3711 [16] and 3GPP TS 33.180 [18] using SRTP-MK, SRTP-MS and SRTP-MKI generated using the MSCCK and MSCCK-ID associated with the MBMS bearer as specified in clause 13.2."*

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 9.3.1]

"The MBMS subchannel control messages shall be coded as described in clause 9.1.2 where the MBMS subchannel control message is part of the application-dependent data.

For the MBMS subchannel control protocol the ASCII name string shall be: MCV3.

The list of MBMS subchannel control messages can be found in the clause 9.3.2.

The MBMS subchannel control specific fields are specified in clause 9.3.3."

[ETSI TS 124 581 [9] (3GPP TS 24.581), clause 9.4.1]

"The MBMS notifications messages shall be coded as described in clause 8.1.2 where the MBMS notifications message is part of the application-dependent data.

For the MBMS notifications protocol the ASCII name string shall be: MCNC.

The list of MBMS notifications messages can be found in the clause 9.4.2.

The MBMS notifications specific fields are specified in clause 9.4.3."

6.7.1.3 Test description

6.7.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client), the SS-UE2 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server and Controlling Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The SS-UE1 (MCVideo Client) and the SS-UE2 (MCVideo Client) perform the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.
- SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) are affiliated to the Prearranged group.
- The IUT (MCVideo Server) is the controlling server of the Prearranged group.
- A pre-activated MBMS bearer exists

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	The SS-UE1 (MCVideo Client) requests the establishment of a group call to SS-UE2 (MCVideo Client) with automatic commencement mode and without implicit transmission request.	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo E2E session establishment/modification without provisional responses other than 100 Trying' as described in Annex A, Table A.3.1.3-1 to establish a pre-arranged group call with automatic commencement mode and without implicit transmission control request according to option a of note in Annex A, Table A.3.1.3-1?	-	-	1	P
3	Make the IUT (MCVideo Server) activate an MBMS bearer and send an MBMS bearer announcement to notify bearer availability (note)	-	-	-	-
-	EXCEPTION: Depending on the IUT (MCVideo Server) implementation, steps 4a-4b and steps 5a-5b might be performed in parallel	-	-	-	-
4a	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to send a MBMS bearer announcement to notify MBMS bearer availability to SS-UE1 (MCVideo Client)?	-	-	2	P
4b	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to send a MBMS Bearer listening status report message to IUT (MCVideo Server), to notify SS-UE1 (MCVideo Client) being listening to general-purpose subchannel?	-	-	3	P
5a	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to send a MBMS bearer announcement to notify MBMS bearer availability to SS-UE2 (MCVideo Client)?	-	-	4	P
5b	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to send a MBMS Bearer listening status report message to IUT (MCVideo Server), to notify SS-UE2 (MCVideo Client) being listening to general-purpose subchannel?	-	-	5	P
6	Make the SS-UE1 (MCVideo Client) request transmission.	-	-	-	-
7	Check: Does the IUT (MCVideo Server) correctly perform steps 1-2 of procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1 over unicast bearer?	-	-	6	P
8	Make the IUT (MCVideo Server) use MBMS subchannel for the conversation. (Note)	-	-	-	-
9	Check: Does the IUT (MCVideo Server) send a Map Group To Bearer message over general purpose MBMS subchannel?	<--	Map Group To Bearer	7	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
10	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to send a MBMS Bearer listening status report message to IUT (MCVideo Server), to notify SS-UE1 (MCVideo Client) being listening to media and transmission control over MBMS subchannel?	-	-	8	P
11	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to send a MBMS Bearer listening status report message to IUT (MCVideo Server), to notify SS-UE2 (MCVideo Client) being listening to media and transmission control over MBMS subchannel?	-	-	9	P
12	Check: Does the IUT (MCVideo Server) send a Transmission Granted message using unicast bearer to SS-UE1 (MCVideo Client)?	<--	Transmission Granted	10	P
13	IF the Transmission Granted message requires acknowledgement, the SS-UE1 (MCVideo Client) responds with a Transmission Control Ack message to IUT (MCVideo Server).	-->	Transmission Control Ack	-	-
14	Check: Does the IUT (MCVideo Server) send a Media Transmission Notification message to SS-UE2 (MCVideo Client) using multicast bearer?	<--	Media Transmission Notification	10	P
15	Make the SS-UE2 (MCVideo Client) request media reception.	-	-	-	-
16	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Media Reception Request and Response' as described in Annex A, Table A.3.9.3-1 for SS-UE2 (MCVideo Client) using unicast bearer?	-	-	11	P
-	EXCEPTION: Depending on the MCVideo Server implementation, steps 17-18 might be performed in parallel.	-	-	-	-
17	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to send a message containing a MuSiK download message to set the explicit MuSiK key to be used for the transmission control encryption over the MBMS subchannel to SS-UE1 (MCVideo Client)?	-	-	12	P
18	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to send a message containing a MuSiK download message to set the explicit MuSiK key to be used for the transmission control encryption over the MBMS subchannel to SS-UE2 (MCVideo Client)?	-	-	12	P
19	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
20	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1, except steps 3a5-3a8 and 3b3-3b4, using unicast bearer?	-	-	13	P
21	Check: Does the IUT (MCVideo Server) send a Transmission Idle message to SS-UE1 (MCVideo Client) and SS-UE2 (MCVideo Client) using multicast bearer?	<--	Transmission Idle	14	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
22	Make the IUT (MCVideo Server) stop using MBMS subchannel for the conversation. (Note)	-	-	-	-
23	Check: Does the IUT (MCVideo Server) send an Unmap Group To Bearer message over general purpose MBMS subchannel?	<--	Unmap Group To Bearer	14	P
24	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to send a MBMS Bearer listening status report message to IUT (MCVideo Server), to notify SS-UE1 (MCVideo Client) not being listening to media and transmission control over MBMS subchannel?	-	-	15	P
25	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to send a MBMS Bearer listening status report message to IUT (MCVideo Server), to notify SS-UE2 (MCVideo Client) not being listening to media and transmission control over MBMS subchannel?	-	-	16	P
26	Make the IUT (MCVideo Server) stop using MBMS bearer. (Note)	-	-	-	-
-	EXCEPTION: Depending on the IUT (MCVideo Server) implementation, steps 27a-27b and steps 28a-28b might be performed in parallel	-	-	-	-
27a	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to send a MBMS bearer cancellation announcement to notify MBMS bearer unavailability to SS-UE1 (MCVideo Client)?	-	-	17	P
27b	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to send a MBMS Bearer listening status report message to IUT (MCVideo Server), to notify SS-UE1 (MCVideo Client) not being listening to general-purpose subchannel?	-	-	18	P
28a	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to send a MBMS bearer cancellation announcement to notify MBMS bearer unavailability to SS-UE2 (MCVideo Client)?	-	-	17	P
28b	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to send a MBMS Bearer listening status report message to IUT (MCVideo Server), to notify SS-UE2 (MCVideo Client) not being listening to general-purpose subchannel?	-	-	19	P
29	Make the SS-UE1 (MCVideo Client) request transmission.	-	-	-	-
30	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission Request - Granted and Media Transmission Notification' as described in Annex A, Table A.3.7.3-1 using unicast bearers?	-	-	6	P
31	Make the SS-UE2 (MCVideo Client) request media reception.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
32	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Media Reception Request and Response' as described in Annex A, Table A.3.9.3-1 for SS-UE2 (MCVideo Client) using unicast bearer?	-	-	11	P
33	Make the SS-UE1 (MCVideo Client) request end of transmission.	-	-	-	-
34	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCVideo Transmission End Request - Idle and Transmission End Notify' as described in Annex A, Table A.3.8.3-1, using unicast bearer?	-	-	13	P
35	Make the SS-UE1 (MCVideo Client) release the call.	-	-	-	-
36	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX E2E call release' as described in Annex A, Table A.2.19.3-1?	-	-	20	P
NOTE: This is expected to be done via a suitable implementation dependent MMI.					

6.7.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.7.1.3.3-1: SIP INVITE from the SS-UE1 (Step 2, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 1, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-1, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.7.1.3.3-2: SIP INVITE from the IUT (MCVideo Server) (Step 2, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1; Step 2, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-4, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.7.1.3.3-3: SIP 200 (OK) from the SS-UE2 (Steps 2, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 5, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-7, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.7.1.3.3-4: SIP 200 (OK) from the IUT (MCVideo Server) (Step 2, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.3.1.3-1, Step 6, Annex A, Table A.2.18.3-1)

Derivation Path: Annex A, Table A.3.1.4-9, with condition GROUP-CALL.
NOTE: Condition is also applied to all body parts.

Table 6.7.1.3.3-5: Transmission Granted (Step 12, Table 6.7.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.1-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Table 6.7.1.3.3-6: Transmission Control Ack (Step 13, Table 6.7.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table 6.7.1.3.3-7: Media Transmission Notification (Step 14, Table 6.7.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.7-1				
Information Element	Value/remark	Comment	Reference	Condition
User Id of the Transmitting User		User ID of the user transmitting the media	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.6	
User Id of the Transmitting User	px_MCVideo_ID_User_A			
Audio SSRC of the Transmitting User	Media/Audio SSRC of remote client (Client A)	SSRC of the user transmitting the media	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.16	
Functional Alias	not present			

Table 6.7.1.3.3-8: Transmission Idle (Step 21, Table 6.7.1.3.2-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.16-1

Table 6.7.1.3.3-9: Map Group To Bearer from the IUT (MCVideo Server) (Step 9, Table 6.7.1.3.2-1)

Derivation Path: ETSI TS 124 581 [9] (3GPP TS 24.581), 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 IUT (MCVideo Server). Notation in accordance with clause 5.5.6.1. Coded as specified in IETF RFC 3550 [25].	
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 ETSI TS 123 003 [26] (3GPP TS 23.003 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 ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.1-1	Mobile Country Code	
MNC	The same value as for PLMN1 specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.1-1	Mobile Network Code	
MBMS Subchannel			
Video m-line Number	"2"		
Audio m-line Number	"1"	The number of the "m=audio" m-line in the SIP MESSAGE request announcing the MBMS bearer	
Control m-line Number	"3"		

Derivation Path: ETSI TS 124 581 [9] (3GPP TS 24.581), Table 9.3.4-1.			
Information Element	Value/remark	Comment	Condition
FEC m-line Number	"0"		
IP version	"0"	'0' = IP version 4 '1' = IP version 6 All other values are reserved for future use	
Transmission Control Port Number	"9"	The port to be used if the<Transmission Control m-line Number> value is greater than '0'. If the < Transmission Control m-line Number> value is equal to '0', the < Transmission Control 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 6.7.1.3.3-10: Unmap Group To Bearer from the IUT (MCVideo Server)
(Step 23, Table 6.7.1.3.2-1)**

Derivation Path: ETSI TS 124 581 [9] (3GPP TS 24.581), Table 9.3.5-1.			
Information Element	Value/remark	Comment	Condition
RTCP header			
Subtype	"00001"	Map Group To Bearer	
SSRC	The SSRC of the message sender	The SSRC of the IUT (MCVideo Server). Notation in accordance with clause 5.5.6.1. Coded as specified in IETF RFC 3550 [25].	
name	MCV3		
MCVideo Group ID	px_MCVideo_Group_A_ID	The group ID of the call	

**Table 6.7.1.3.3-11: SIP MESSAGE from the IUT (MCVideo Server) to SS-UE1
(Step 4a, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.9.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Service				
Service-ID	"urn:urn-7:3gpp-service.ims.icsi.mcvideo"			
P-Asserted-Identity				
addr-spec	tsc_MCVideo_PublicServiceId_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 6.7.1.3.3-13			
MIME body part		MCVideo MBMS usage info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-mbms-usage-info+xml"			

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.7.1.3.3-14			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-15			

**Table 6.7.1.3.3-12: SIP MESSAGE from the IUT (MCVideo Server) to SS-UE2
(Step 5a, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.9.3-1)**

Derivation Path: Table 6.7.1.3.3-11				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-headers				
MIME-part-body	SDP message as described in Table 6.7.1.3.3-13			
MIME body part		MCVideo MBMS usage info		
MIME-part-headers				
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.7.1.3.3-14			
MIME body part		MCVideo-Info		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-16			

Table 6.7.1.3.3-13: SDP in SIP MESSAGE (Tables 6.7.1.3.3-11 and 6.7.1.3.3-12)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.1.2-2				
Information Element	Value/remark	Comment	Reference	Condition
Media description				
media description[1]		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[2]		m= line media = video		
media	"video"			
port	"9"			
proto	"RTP/AVP"			
fmt	"100"			
Connection Data				
nettype	"IN"			
Addrtype	"IP4" or "IP6" depending on IP address			

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.1.2-2				
Information Element	Value/remark	Comment	Reference	Condition
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 IUT (MCVideo Server)			
proto	"udp"			
fmt	"MCVideo"			
Connection Data		c= line		
nettype	"IN"			
addrtype	"IP4"			
connection-address	multicast IP assigned by the IUT (MCVideo Server)			
media attribute		a= line attribute = key-mgmt		
key-mgmt				
mikey	MIKEY-SAKKE I_MESSAGE as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.9.1-2	MSCCK distribution as specified in ETSI TS 133 180 [7] (3GPP TS 33.180) Annex H		

Table 6.7.1.3.3-14: MCVideo-MBMS-Usage-Info in SIP MESSAGE (Tables 6.7.1.3.3-11 and 6.7.1.3.3-12)

Derivation Path: ETSI TS 124 281 [8] (3GPP TS 24.281), 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 ETSI TS 123 003 [26] (3GPP TS 23.003) 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 ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.1-1	Mobile Country Code		
MNC	The same value as for PLMN1 specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), 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"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.3.2	

Table 6.7.1.3.3-15: MCVideo-Info in SIP MESSAGE (Table 6.7.1.3.3-11)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVIDEO_ID_User_ A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.3.2.2	
mcvideo-calling-user-id	not present			
NOTE: Encrypted element as described in Table 5.5.3.2.2-2A.				

Table 6.7.1.3.3-16: MCVideo-Info in SIP MESSAGE (Table 6.7.1.3.3-12)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVIDEO_ID_User_B		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.3.2.2	
mcvideo-calling-user-id	not present			
NOTE: Encrypted element as described in Table 5.5.3.2.2-2A.				

**Table 6.7.1.3.3-17: SIP MESSAGE from the SS-UE1
(Step 4b, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.8.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	The value received in the P-Asserted-Identity header field of the announcement message (tsc_MCVideo_PublicServiceId_A)			
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 6.7.1.3.3-19			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-20			

**Table 6.7.1.3.3-18: SIP MESSAGE from the SS-UE2
(Step 5b, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.8.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	The value received in the P-Asserted-Identity header field of the announcement message (tsc_MCVideo_PublicServiceId_A)			
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 6.7.1.3.3-19			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-21			

Table 6.7.1.3.3-19: MCVideo-MBMS-Usage-Info in SIP MESSAGE (Tables 6.7.1.3.3-17 and 6.7.1.3.3-18)

Derivation Path: ETSI TS 124 281 [8] (3GPP TS 24.281), Clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status			ETSI TS 124 281 [8] (3GPP TS 24.281) 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"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.2.3.2	

Table 6.7.1.3.3-20: MCVideo-Info in SIP MESSAGE (Table 6.7.1.3.3-17)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVIDEO_ID_User_A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.2.3.2	
mcvideo-calling-user-id	not present			
NOTE: Encrypted element as described in Table 5.5.3.2.1-2A.				

Table 6.7.1.3.3-21: MCVideo-Info in SIP MESSAGE (Table 6.7.1.3.3-18)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVIDEO_ID_User_B		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.2.3.2	
mcvideo-calling-user-id	not present			
NOTE: Encrypted element as described in Table 5.5.3.2.1-2A.				

Table 6.7.1.3.3-22: SIP MESSAGE from the SS-UE1
(Step 10, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	The value received in the P-Asserted-Identity header field of the announcement message (tsc_MCVideo_PublicServiceId_A)			
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 6.7.1.3.3-24			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-20			

Table 6.7.1.3.3-23: SIP MESSAGE from the SS-UE2
(Step 11, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	The value received in the P-Asserted-Identity header field of the announcement message (tsc_MCVideo_PublicServiceId_A)			
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 6.7.1.3.3-24			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-21			

Table 6.7.1.3.3-24: MCVideo-MBMS-Usage-Info in SIP MESSAGE
(Tables 6.7.1.3.3-22 and 6.7.1.3.3-23)

Derivation Path: ETSI TS 124 281 [8] (3GPP TS 24.281), Clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status			ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.2.3.2	
mbms-listening-status	"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"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.2.3.2	

Table 6.7.1.3.3-25: SIP MESSAGE from the IUT (MCVideo Server) to SS-UE1 and SS-UE2
(Step 17 and 18, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.9.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, with conditions MCVIDEO and MIKEY				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Service				
Service-ID	"urn:urn-7:3gpp-service.ims.icsi.mcvideo"			
P-Asserted-Identity				
addr-spec	tsc_MCVideo_PublicServiceId_A			
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 6.7.1.3.3-26			

Table 6.7.1.3.3-26: MCVideo-MBMS-Usage-Info in SIP MESSAGE (Tables 6.7.1.3.3-25)

Derivation Path: ETSI TS 124 281 [8] (3GPP TS 24.281), 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 6.7.1.3.3-27: SIP MESSAGE from the SS-UE1
(Step 24, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	The value received in the P-Asserted-Identity header field of the announcement message (tsc_MCVideo_PublicServiceId_A)			
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 6.7.1.3.3-29			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-20			

Table 6.7.1.3.3-28: SIP MESSAGE from the SS-UE2
(Step 25, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	The value received in the P-Asserted-Identity header field of the announcement message (tsc_MCVideo_PublicServiceId_A)			
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 6.7.1.3.3-29			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-21			

Table 6.7.1.3.3-29: MCVideo-MBMS-Usage-Info in SIP MESSAGE
(Tables 6.7.1.3.3-27 and 6.7.1.3.3-28)

Derivation Path: ETSI TS 124 281 [8] (3GPP TS 24.281), Clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status			ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.2.3.2	
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"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.2.3.2	

Table 6.7.1.3.3-30: SIP MESSAGE from the IUT (MCVideo Server) to SS-UE1
(Step 27a, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.9.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
P-Asserted-Service				
Service-ID	"urn:urn-7:3gpp-service.ims.icsi.mcvideo"			
P-Asserted-Identity				
addr-spec	tsc_MCVideo_PublicServiceId_A			
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 6.7.1.3.3-32			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-15			

Table 6.7.1.3.3-31: SIP MESSAGE from the IUT (MCVideo Server) to SS-UE2
(Step 28a, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.9.3-1)

Derivation Path: Table 6.7.1.3.3-11				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo MBMS usage info		
MIME-part-headers				
MIME-part-body	MCVideo MBMS Usage Info as described in Table 6.7.1.3.3-32			
MIME body part		MCVideo-Info		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-16			

Table 6.7.1.3.3-32: MCVideo-MBMS-Usage-Info in SIP MESSAGE
(Tables 6.7.1.3.3-30 and 6.7.1.3.3-31)

Derivation Path: ETSI TS 124 281 [8] (3GPP TS 24.281), 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 ETSI TS 123 003 [26] (3GPP TS 23.003 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 ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.1-1	Mobile Country Code		
MNC	The same value as for PLMN1 specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.1-1	Mobile Network Code		
QCI	"67"			
mbms-service-areas	not present			
GPMS	not present			
version	"1"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.3.2	

Table 6.7.1.3.3-33: SIP MESSAGE from the SS-UE1
(Step 27b, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	The value received in the P-Asserted-Identity header field of the announcement message (tsc_MCVideo_PublicServiceId_A)			
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 6.7.1.3.3-35			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-20			

Table 6.7.1.3.3-34: SIP MESSAGE from the SS-UE2
(Step 28b, Table 6.7.1.3.2-1; Step 1, Annex A, Table A.2.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Request-Line				
Request-URI	The value received in the P-Asserted-Identity header field of the announcement message (tsc_MCVideo_PublicServiceId_A)			
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 6.7.1.3.3-35			
MIME body part		MCVideo-Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml "			
MIME-part-body	MCVideo-Info as described in Table 6.7.1.3.3-21			

Table 6.7.1.3.3-35: MCVideo-MBMS-Usage-Info in SIP MESSAGE
(Tables 6.7.1.3.3-33 and 6.7.1.3.3-34)

Derivation Path: ETSI TS 124 281 [8] (3GPP TS 24.281), Clause F.2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-mbms-usage-info				
mbms-listening-status			ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.2.3.2	
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"		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 16.2.3.2	

6.8 Location

6.8.1 MCVideo Server - MCVideo Client / Location / Event Triggered Location Information report

6.8.1.1 Test Purpose (TP)

(1)

```
with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { IUT (MCVideo Server) requests to send a location reporting configuration }
  then { IUT (MCVideo Server) sends a SIP MESSAGE message containing the cell change trigger
criteria and the minimum report interval to the SS-UE1 (MCVideo Client) }
}
```

(2)

```
with { IUT (MCVideo Server) having received Location Information report }
ensure that {
  when { SS-UE1 (MCVideo Client) requests location report containing the cell change trigger
identification along with the location information report, the current location coordinates and the
current serving ECGI by sending a SIP MESSAGE message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) }
}
```

6.8.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 18.2.2, 18.2.4, 18.3.2, 18.3.4.1, 18.3.4.2, 6.2.9.1. Unless otherwise stated these are Rel-16 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 18.2.2]

"The participating MCVideo function may configure the location reporting in the MCVideo client by generating a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]. The participating MCVideo function:

- 1) *shall include a Request-URI set to the URI corresponding to the identity of the MCVideo client;*
- 2) *shall include 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" along with parameters "require" and "explicit" in accordance with IETF RFC 3841 [20];*
- 3) *shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-request-uri> element containing the MCVideo ID of the MCVideo user to receive the configuration;*
- 4) *shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body with the <Configuration> element contained in the <location-info> root element set to the desired configuration;*
- 5) *shall include the TriggerId attribute where defined for the sub-elements defining the trigger criterion;*
- 6) *shall include the public service identity of the participating MCVideo function in the P-Asserted-Identity header field;*
- 7) *shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and*
- 8) *shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]."*

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 18.2.4]

"If the participating MCVideo function receives a SIP request containing:

- 1) *a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml"; and*

- 2) an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Report> element included in the <location-info> root element;

then the participating MCVideo function shall authorise the location report based on the MCVideo ID received. If the MCVideo user is authorised to send a location report the participating MCVideo function:

- 1) shall use the location information as needed.

NOTE: The <Report> element contains the event triggering identity in the location information report from the UE, and can contain location information."

[ETSI TS 124 281 [8] (3GPP 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."

[ETSI TS 124 281 [8] (3GPP 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."

[ETSI TS 124 281 [8] (3GPP 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.2.9.1]

"This procedure is initiated by the MCVideo client when it is including location report information as part of a SIP request for a specified location trigger.

The MCVideo client:

- 1) shall include an application/vnd.3gpp.location-info+xml MIME body as specified in Annex F.3 with a <Report> element included in the <location-info> root element; and
- 2) shall include in the <Report> element the specific location information configured for the specified location trigger."

6.8.1.3 Test description

6.8.1.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.

- The IUT (MCVideo Server) is the acting Participating Server

Preamble:

- The IUT (MCVideo Server) is connected to PLMN1
- The IUT (MCVideo Server) is connected to the SS-UE1 (MCVideo Client) as defined in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Figure 4.2.4.
- The SS-UE1 (MCVideo Client) performs the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.

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 IUT (MCVideo Server) send a location reporting configuration to SS-UE1 (MCVideo Client). (Note 1)	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A, Table A.2.9.3-1 to send a location reporting configuration message containing the cell change trigger criteria and the minimum report interval to SS-UE1 (MCVideo Client)?	-	-	1	P
3	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A, Table A.2.8.3-1 to send a location report from SS-UE1 (MCVideo Client), containing the cell change trigger identification along with the location information report, the current location coordinates, and the current serving ECGI? (Note 2)	-	-	2	P
NOTE 1: This is expected to be done via a suitable implementation dependent MMI.					
NOTE 2: This action represents the UE changing from cell.					

6.8.1.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.8.1.3.3-1: SIP MESSAGE from the IUT (MCVideo Server)
(Step 2, Table 6.8.1.3.2-1; Step 1, Annex A, Table A.2.9.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, condition MCVIDEO and 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 6.8.1.3.3-2			
MIME body part		Location-info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause F.3	
MIME-part-body	Location-info as described in Table 6.8.1.3.3-3			

Table 6.8.1.3.3-2: MCVideo-Info in SIP MESSAGE (Table 6.8.1.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 18.2.2	
mcvideo-calling-user-id	not present			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

Table 6.8.1.3.3-3: Location-Info in SIP MESSAGE (Table 6.8.1.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.4.2-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Configuration				
NonEmergencyLocationInformation				
ServingEcgi	present	Provision of information in the report is requested.		
NeighbouringEcgi	present	Provision of information in the report is requested.		
MbmsSald	not present	Provision of information in the report is not requested.		
MbsfnArea	not present	Provision of information in the report is not requested.		
GeographicalCoordinate	present			
minimumIntervalLength	"25"	the value in seconds		
EmergencyLocationInformation"				
ServingEcgi	present	Provision of information in the report is requested.		
NeighbouringEcgi	present	Provision of information in the report is requested.		
MbmsSald	not present	Provision of information in the report is not requested.		
MbsfnArea	not present	Provision of information in the report is not requested.		
GeographicalCoordinate	present	Provision of information in the report is requested.		
minimumIntervalLength	"30"	the value in seconds		
TriggeringCriteria				
CellChange				
AnyCellChange				
TriggerID	any value			

Table 6.8.1.3.3-4: SIP MESSAGE
(Step 3, Table 6.8.1.3.2-1; Step 1, Annex A, Table A.2.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body	MIME body not including MCVideo-Info and not including MCVideo-Affiliation-Command	not including any MIME body part with Content-Type being "application/vnd.3gpp.mcvideo-info+xml" or "application/vnd.3gpp.mcvideo-affiliation-command+xml"		
MIME body part		Location info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause F.3	
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-location-info+xml"			
MIME-part-body	Location-info as described in Table 6.8.1.3.3-5			

Table 6.8.1.3.3-5: Location-Info in SIP MESSAGE (Table 6.8.1.3.3-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.4.1-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Report				
TriggerID	Same value as in the location configuration	Value included in Table 6.8.1.3.3-3		
CurrentLocation				
CurrentServingEcgi	The E-UTRAN Cell Global Identification (ECGI) of Cell 2			
NeighbouringEcgi	The ECGI of Cell 1			
CurrentCoordinate		The location simulated by the GNSS simulator at the time of transmission of the message.		
longitude	px_MCX_CoordinateLongitude_Client_A (note)			
latitude	px_MCX_CoordinateLatitude_Client_A (note)			
ReportType	"NonEmergency"			

NOTE: Shall be encrypted as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1) Table 5.5.3.4.1-2A.

6.8.2 MCVideo Server - MCVideo Client / Location / On-demand Location Information Request

6.8.2.1 Test Purpose (TP)

(1)

```

with { IUT (MCVideo Server) connected to PLMN1 }
ensure that {
  when { IUT (MCVideo Server) requests to send a location reporting configuration }
  then { IUT (MCVideo Server) sends a SIP MESSAGE message containing the periodic trigger criteria
and the minimum report interval to the SS-UE1 (MCVideo Client) }
}

```

(2)

```

with { IUT (MCVideo Server) having received Location Information report }
ensure that {
  when { IUT (MCVideo Server) requests to send an on-demand location report }
  then { IUT (MCVideo Server) sends a SIP MESSAGE message to the SS-UE1 (MCVideo Client) }
}

```

(3)

```

with { IUT (MCVideo Server) having received Location Information report }
ensure that {
  when { SS-UE1 (MCVideo Client) requests location report containing the location information
  report, the current location coordinates and the current serving ECGI by sending a SIP MESSAGE
  message }
  then { IUT (MCVideo Server) responds with a SIP 200 (OK) }
}

```

6.8.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: ETSI TS 124 281 [8] (3GPP TS 24.281), clauses 18.2.3, 18.2.4, 18.3.3, 18.3.4.1, 18.3.4.2, 6.2.9.1. Unless otherwise stated these are Rel-16 requirements.

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 18.2.3]

"If the participating MCVideo function needs to request the MCVideo client to report its location, the participating MCVideo functions shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]. The participating MCVideo function:

- 1) *shall include a Request-URI set to the URI corresponding to the identity of the MCVideo client;*
- 2) *shall include 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" along with parameters "require" and "explicit" in accordance with IETF RFC 3841 [20];*
- 3) *shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-request-uri> element containing the MCVideo ID of the MCVideo user;*
- 4) *shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Request> element contained in the <location-info> root element;*
- 5) *shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and*
- 6) *shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]."*

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 18.2.4]

"If the participating MCVideo function receives a SIP request containing:

- 1) *a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml"; and*
- 2) *an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Report> element included in the <location-info> root element;*

then the participating MCVideo function shall authorise the location report based on the MCVideo ID received. If the MCVideo user is authorised to send a location report the participating MCVideo function:

- 1) *shall use the location information as needed.*

NOTE: *The <Report> element contains the event triggering identity in the location information report from the UE, and can contain location information."*

[ETSI TS 124 281 [8] (3GPP 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."

[ETSI TS 124 281 [8] (3GPP 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.

[ETSI TS 124 281 [8] (3GPP 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]."

[ETSI TS 124 281 [8] (3GPP TS 24.281), clause 6.2.9.1]

"This procedure is initiated by the MCVideo client when it is including location report information as part of a SIP request for a specified location trigger.

The MCVideo client:

- 1) shall include an application/vnd.3gpp.location-info+xml MIME body as specified in Annex F.3 with a <Report> element included in the <location-info> root element; and
- 2) shall include in the <Report> element the specific location information configured for the specified location trigger."

6.8.2.3 Test description

6.8.2.3.1 Pre-test conditions

System Simulator:

- SS-UE1 (MCVideo Client)
- For the underlying "transport bearer" over which the SS-UE1 (MCVideo Client) and the MCVideo Server will communicate, Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in ETSI TS 136 508 [5] (3GPP TS 36.508) clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- IUT (MCVideo Server)
- The IUT (MCVideo Server) consists of all sub-systems of the Common Services Core, including the Group Management Server, the Configuration Management Server, the Key Management Server, the Identity Management Server, the HTTP Server, and the SIP AS. The IUT (MCVideo Server) also consists of all sub-systems of the MCVideo Server, including the Media Distribution Function, the MCVideo User Database, the SIP AS, the HTTP Server, the HTTP Client, and the Transmission Control Server.
- The IUT (MCVideo Server) is the acting Participating Server.

Preamble:

- The IUT (MCVideo Server) is connected to PLMN
- The IUT (MCVideo Server) is connected to the SS-UE1 (MCVideo Client) as defined in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Figure 4.2.4.
- The SS-UE1 (MCVideo Client) performs the Procedure for MCVideo Authorization, Configuration and Key Generation as specified in clause 5.1.

6.8.2.3.2 Test procedure sequence

Table 6.8.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the IUT (MCVideo Server) send a location reporting configuration to SS-UE1 (MCVideo Client)? (Note)	-	-	-	-
2	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A Table A.2.9.3-1 to send a location reporting configuration message containing the periodic trigger criteria and the minimum report interval to SS-UE1 (MCVideo Client)?	-	-	1	P
3	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Originated SIP MESSAGE' as described in Annex A Table A.2.9.3-1 to send an on-demand location report request to SS-UE1 (MCVideo Client)?	-	-	2	P
4	Check: Does the IUT (MCVideo Server) correctly perform procedure 'MCX Participating Terminated SIP MESSAGE' as described in Annex A Table A.2.8.3-1 to send a location report from SS-UE1 (MCVideo Client) containing the location information report, the current location coordinates, and the current serving ECGI?	-	-	3	P
NOTE: This is expected to be done via a suitable implementation dependent MMI.					

6.8.2.3.3 Specific message contents

All message contents are specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), in the subclauses referenced in each step, with the following clarifications.

Table 6.8.2.3.3-1: SIP MESSAGE from the IUT (MCVideo Server)
(Step 2, Table 6.8.2.3.2-1; Step 1, Annex A, Table A.2.9.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, condition MCVIDEO and 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 6.8.2.3.3-2			
MIME body part		Location-info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause F.3	
MIME-part-body	Location-info as described in Table 6.8.2.3.3-3			

Table 6.8.2.3.3-2: MCVideo-Info in SIP MESSAGE (Table 6.8.2.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 18.2.2	
mcvideo-calling-user-id	not present			
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

Table 6.8.2.3.3-3: Location-Info in SIP MESSAGE (Table 6.8.2.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.4.2-2				
Information Element	Value/remark	Comment	Reference	Condition
location-info				
Configuration				
NonEmergencyLocationInformation				
ServingEcgi	present	Provision of information in the report is requested.		
NeighbouringEcgi	present	Provision of information in the report is requested.		
MbmsSald	not present	Provision of information in the report is not requested.		
MbsfnArea	not present	Provision of information in the report is not requested.		
GeographicalCoordinate	present			
minimumIntervalLength	"25"	the value in seconds		
EmergencyLocationInformation"				
ServingEcgi	present	Provision of information in the report is requested.		
NeighbouringEcgi	present	Provision of information in the report is requested.		
MbmsSald	not present	Provision of information in the report is not requested.		
MbsfnArea	not present	Provision of information in the report is not requested.		
GeographicalCoordinate	present	Provision of information in the report is requested.		
minimumIntervalLength	"30"	the value in seconds		
TriggeringCriteria				
PeriodicReport				
extension base	"15"	periodicity of the reports (in seconds)		
TiggerID	any value			

**Table 6.8.2.3.3-4: SIP MESSAGE from the IUT (MCVideo Server)
(Step 3, Table 6.8.2.3.2-1; Step 1, Annex A, Table A.2.9.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.2-1, condition MCVIDEO and 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 6.8.2.3.3-2			
MIME body part		Location-info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause F.3	
MIME-part-body	Location-info as described in Table 6.8.2.3.3-5			

Table 6.8.2.3.3-5: Location-Info in SIP MESSAGE (Table 6.8.2.3.3-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.4.3-2

**Table 6.8.2.3.3-6: SIP MESSAGE from the SS-UE1 (MCVideo Client)
(Step 4, Table 6.8.2.3.2-1; Step 1, Annex A, Table A.2.8.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.7.1-1

Information Element	Value/remark	Comment	Reference	Condition
Message-body	MIME body not including MCVideo-Info and not including MCVideo-Affiliation-Command	not including any MIME body part with Content-Type being "application/vnd.3gpp.mcvideo-info+xml" or "application/vnd.3gpp.mcvideo-affiliation-command+xml"		
MIME body part		Location info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause F.3	
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-location-info+xml"			
MIME-part-body	Location-info as described in Table 6.8.2.3.3-7			

Table 6.8.2.3.3-7: Location-Info in SIP MESSAGE (Table 6.8.2.3.3-6)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), 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				
CurrentServingEcgi	The E-UTRAN Cell Global Identification (ECGI) of Cell 2			
NeighbouringEcgi	The ECGI of Cell 1			
CurrentCoordinate		The location simulated by the GNSS simulator at the time of transmission of the message.		
longitude	px_MCX_CoordinateLongitude_Client_A (note)			
latitude	px_MCX_CoordinateLatitude_Client_A (note)			

NOTE: Shall be encrypted as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1) Table 5.5.3.4.1-2A.

6.9 Capability information sharing

This feature is not specified in the present version of the present document.

Annex A (normative): Common Test Environment

A.1 Introduction

This annex specifies additional generic test procedures to ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), to be used by the test cases wherever applicable.

A.2 Generic test procedures for Server-Client MCS operation

A.2.1 General

The purpose of the procedures specified in the following clauses is to facilitate test description by providing procedure sequences which can be referred from the relevant server-to-client TCs specified in the present document.

The procedures specified are required to ensure that any MC service can take place between a MC client and a MC server or specific MC relevant pre-conditions are met before a test case can be executed.

A.2.2 Void

A.2.3 MCX Server Originated notifications regarding temporary group creation or tear down

A.2.3.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.2.3.2 Definition of system information messages

N/A

A.2.3.3 Procedure

Table A.2.3.3-1: MCX Server originated notifications regarding temporary group creation or tear down

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the MCX Server send a SIP NOTIFY to the SS-UE informing about change of group A's configuration document?	<--	SIP NOTIFY	-	P
2	The SS-UE (MCX Client) sends a SIP 200 (OK) message to the MCX Server.	-->	SIP 200 (OK)	-	-
3	The SS-UE (MCX Client) sends an HTTP GET Request message to the MCX Server that contains the access token and the XCAP-URI of the Group Configuration document.	-->	HTTP GET	-	-
4	Check: Does the MCX Server send a HTTP 200 (OK) message including the updated Group Document?	<--	HTTP 200 (OK)	-	P
5	Check: Does the MCX Server send a SIP NOTIFY message to the SS-UE (MCX Client) containing the group key transport payloads (GKTP) document including the group keys?	<-	SIP NOTIFY	-	P
6	The SS-UE (MCX Client) sends a SIP 200 (OK) message.	-->	SIP 200 (OK)	-	-
NOTE: The SS-UE being used is specified in the test case calling the procedure.					

A.2.3.4 Specific message contents

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).
- Clarifications specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.3.22.4 shall also be followed:

Table A.2.3.4-1: SIP NOTIFY (Step 1, Table A.2.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.3.22.4-1

Table A.2.3.4-2: SIP 200 (OK) (Steps 2, 6, Table A.2.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.3.22.4-2

Table A.2.3.4-3: HTTP GET (Step 3, Table A.2.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.3.22.4-3

Table A.2.3.4-4: HTTP 200 (OK) (Step 4, Table A.2.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.3.22.4-4

Table A.2.3.4-5: SIP NOTIFY (Step 5, Table A.2.3.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.3.22.4-6

A.2.4 MCX Server Terminated Group Creation

A.2.4.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDData.

A.2.4.2 Definition of system information messages

N/A

A.2.4.3 Procedure

Table A.2.4.3-1: MCX Server Terminated Group Creation procedure

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCX Client) sends a HTTP PUT to the Group Management Server for requesting the creation of the new group. (Note)	-->	HTTP PUT	-	-
2	Check: Does the MCX Server respond with a HTTP 201 (Created) response message?	<--	HTTP 201 (Created)	-	P

NOTE: The SS-UE being used is specified in the test case calling the procedure.

A.2.4.4 Specific message contents

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.4.4-1: HTTP PUT (Step 1, Table A.2.4.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.4-1, condition GROUPECREATE

A.2.5 MCX Server Terminated Temporary Group Creation

A.2.5.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDData.

A.2.5.2 Definition of system information messages

N/A

A.2.5.3 Procedure

A.2.5.3-1: MCX Participating Terminated Temporary Group Creation procedure

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCX Client) sends a HTTP POST to the MCX Server to request for creation of a temporary group. (Note)	-->	HTTP POST	-	-
2	Check: Does the MCX Server send a HTTP 200 (OK) containing the GMOP group-regroup-creation-response?	<--	HTTP 200 (OK)	-	P
NOTE: The SS-UE being used is specified in the test case calling the procedure.					

A.2.5.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.5.4-1: HTTP POST (Step 1, Table A.2.5.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.3-1, condition TEMPGROUP

Table A.2.5.4-2: HTTP 200 (OK) (Step 2, Table A.2.5.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.6-1, condition TEMPGROUP

A.2.6 MCX Server Terminated Temporary Group Tear Down

A.2.6.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCData.

A.2.6.2 Definition of system information messages

N/A

A.2.6.3 Procedure

Table A.2.6.3-1: MCX Server Terminated Temporary Group Tear Down procedure

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCX Client) sends a HTTP DELETE to the MCX Server to request for tear down of a temporary group. (Note)	-->	HTTP DELETE	-	-
2	Check: Does the MCX Server send a HTTP 200 (OK) response message?	<--	HTTP 200 (OK)	-	P
NOTE: The SS-UE being used is specified in the test case calling the procedure.					

A.2.6.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.6.4-1: HTTP DELETE (Step 1, Table A.2.6.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.4.5-1, condition TEMPGROUP

A.2.7 MCX Subscription and Notification

A.2.7.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDATA.

A.2.7.2 Definition of system information messages

N/A

A.2.7.3 Procedure

Table A.2.7.3-1: MCX Subscription and Notification

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCX Client) sends a SIP SUBSCRIBE message request.	-->	SIP SUBSCRIBE	-	-
2	Check: Does the MCX Server respond to the SIP SUBSCRIBE message with a SIP 200 (OK) message?	<--	SIP 200 (OK)	-	P
3	Check: Does the MCX Server send a SIP NOTIFY message?	<--	SIP NOTIFY	-	P
4	The SS-UE (MCX Client) responds with a SIP 200 (OK) message.	-->	SIP 200 (OK)		
NOTE: The SS-UE being used is specified in the test case calling the procedure.					

A.2.7.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.7.4-1: SIP SUBSCRIBE (Step 1, Table A.2.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.14-1				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
Value	"4294967295"	to receive the current status and later notification	ETSI TS 124 379 [3] (3GPP TS 24.379) clauses 9.2.1.3 and 9A.2.1.3; ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.1.3; ETSI TS 124 282 [30] (3GPP TS 24.282) clauses 8.2.3 and 22.2.1.3	
Message-body				
MIME body part		MCPTT Info	TS 124.379 [6] (TS 24.379) clause 9.2.1.3 and 9A.2.1.3	MCPTT
MIME-part-body	MCPTT-Info as described in Table A.2.7.4-2			
MIME body part		MCVIDEO Info	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.1.3	MCVIDEO
MIME-part-body	MCVIDEO-Info as described in Table A.2.7.4-3			
MIME body part		MCDATA Info	ETSI TS 124 282 [30] (3GPP TS 24.282) clauses 8.2.3 and 22.2.1.3	MCDATA
MIME-part-body	MCDATA-Info as described in Table A.2.7.4-4			

Table A.2.7.4-2: MCPTT-Info in SIP SUBSCRIBE (Table A.2.7.4-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Mcpttinfo				
mcptt-Params				
mcptt-request-uri	encrypted (note) <mcptt-request-uri> with mcpttURI set to px_MCPTT_ID_User_A		ETSI TS 124 379 [3] (3GPP TS 24.379) clauses 9.2.1.3 and 9A.2.1.3	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-1A.				

Table A.2.7.4-3: MCVideo-Info in SIP SUBSCRIBE (Table A.2.7.4-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
Mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.1.3	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table A.2.7.4-4: MCDATA-Info in SIP SUBSCRIBE (Table A.2.7.4-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
Mcdainfo				
mcdainfo-Params				
mcdainfo-request-uri	encrypted (note) <mcdainfo-request-uri> with mcdainfoURI set to px_MCDATA_ID_User_A		ETSI TS 124 282 [30] (3GPP TS 24.282) clauses 8.2.3 and 22.2.1.3	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-3A.				

Table A.2.7.4-5: SIP 200 (OK) (Step 2, Table A.2.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1 with condition SUBSCRIBE-RSP

A.2.8 MCX Participating Terminated SIP MESSAGE

A.2.8.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDATA

A.2.8.2 Definition of system information messages

N/A

A.2.8.3 Procedure

Table A.2.8.3-1: MCX Participating Terminated SIP MESSAGE

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCX Client) send a SIP MESSAGE message (note)	-->	SIP MESSAGE	-	-
2	Check: Does the MCX Server responds with a SIP 200 (OK) message?	<--	SIP 200 (OK)	-	P

NOTE: The SS-UE being used is specified in the test case calling the procedure.

A.2.8.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

A.2.9 MCX Participating Originated SIP MESSAGE

A.2.9.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDATA

A.2.9.2 Definition of system information messages

N/A

A.2.9.3 Procedure

Table A.2.9.3-1: MCX Participating Originated SIP MESSAGE

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the MCX Server send a SIP MESSAGE message?	<--	SIP MESSAGE	-	P
2	The SS-UE (MCX Client) responds with a SIP 200 (OK) message (note)	→	SIP 200 (OK)	-	-

NOTE: The SS-UE being used is specified in the test case calling the procedure.

A.2.9.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

A.2.10 MCX E2E SIP MESSAGE

A.2.10.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT or MCVideo

A.2.10.2 Definition of system information messages

N/A

A.2.10.3 Procedure

Table A.2.10.3-1: MCX E2E SIP MESSAGE

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE1 (MCX Client) sends a SIP MESSAGE message	-->	SIP MESSAGE	-	-
2	Check: Does the MCX Server send a SIP MESSAGE to SS-UE2?	<--	SIP MESSAGE	-	P
3	The SS-UE2 (MCX Client) responds with a SIP 200 (OK) message	-->	SIP 200 (OK)	-	-
4	Check: Does the MCX Server respond with a SIP 200 (OK) message to SS-UE1?	<--	SIP 200 (OK)	-	P

A.2.10.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

A.2.11 MCX E2E SIP MESSAGE Request - Accept

A.2.11.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT or MCVideo

A.2.11.2 Definition of system information messages

N/A

A.2.11.3 Procedure

Table A.2.11.3-1: MCX E2E SIP MESSAGE Request - Accept Participating Originated

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE1 (MCX Client) sends a SIP MESSAGE message.	-->	SIP MESSAGE	-	-
2	Check: Does the MCX Server respond with a SIP 200 (OK) message	<--	SIP 200 (OK)	-	P
3	Check: Does the MCX server send a SIP MESSAGE accepting the request to SS-UE1?	<--	SIP MESSAGE	-	P
4	The SS-UE1 (MCX Client) responds with a SIP 200 (OK) message.	-->	SIP 200 (OK)	-	-
-	EXCEPTION: Depending on the MCX Server implementation, the following steps may be performed in parallel to steps 3-4.	-	-	-	-
5	Check: Does the MCX Server send a SIP MESSAGE message to SS-UE2?	<--	SIP MESSAGE	-	P
6	The SS-UE2 (MCX Client) responds with a SIP 200 (OK) message.	-->	SIP 200 (OK)	-	-

A.2.11.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

A.2.12 MCX Presence Event Status Change

A.2.12.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDData

A.2.12.2 Definition of system information messages

N/A

A.2.12.3 Procedure

Table A.2.12.3-1: MCX Presence Event Status Change

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCX Client) sends a SIP PUBLISH message.	-->	SIP PUBLISH	-	P
2	Check: Does the MCX Server respond to the SIP PUBLISH message with a SIP 200 (OK) message?	<--	SIP 200 (OK)	-	-
3	Check: Does the MCX Server send a SIP NOTIFY message informing about the status change progress?	<--	SIP NOTIFY	-	P
4	The SS-UE (MCX Client) responds with a SIP 200 (OK)	-->	SIP 200 (OK)	-	-
5	Check: Does the MCX Server send a SIP NOTIFY informing about the final status?	<--	SIP NOTIFY	-	P
6	The SS-UE responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
NOTE: The SS-UE being used is specified in the test case calling the procedure.					

A.2.12.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.12.4-1: SIP PUBLISH (Step 1, Table A.2.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.11-1, condition PRESENCE-EVENT

Table A.2.12.4-2: MCPTT-Info in SIP PUBLISH (Table A.2.12.4-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Mcpttinfo				
mcptt-Params				
mcptt-request-uri	encrypted (note) <mcptt-request-uri> with mcpttURI set to px_MCPTT_ID_User_A		ETSI TS 124 379 [3] (3GPP TS 24.379) clauses 9.2.1.3 and 9A.2.1.3	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-1A.				

Table A.2.12.4-3: MCVideo-Info in SIP PUBLISH (Table A.2.12.4-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
Mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_A		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.1.3	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2A.				

Table A.2.12.4-4: MCDATA-Info in SIP PUBLISH (Table A.2.12.4-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
Mcdainfo				
mcdainfo-request-uri	encrypted (note) <mcdainfo-request-uri> with mcdainfoURI set to px_MCDATA_ID_User_A		ETSI TS 124 282 [30] (3GPP TS 24.282) clauses 8.2.3 and 22.2.1.3	
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-3A.				

Table A.2.12.4-5: SIP 200 (OK) (Step 2, Table A.2.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1, condition PUBLISH-RSP

Table A.2.12.4-6: SIP NOTIFY (Steps 3 and 5, Table A.2.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.8-1, condition PRESENCE-EVENT

Table A.2.12.4-7: SIP 200 (OK) (Steps 4 and 6, Table A.2.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.1-1

A.2.13 MCX Participating Terminated pre-established session establishment

A.2.13.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT or MCVideo

A.2.13.2 Definition of system information messages

N/A

A.2.13.3 Procedure

Table A.2.13.3-1: MCX Participating Terminated pre-established session establishment

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCX Client) sends a SIP INVITE message in order to create a pre-established session	-->	SIP INVITE	-	-
-	EXCEPTION: Step 2a1 describes behaviour that depends on the MCX Server implementation; the "lower case letter" identifies a step sequence that take place if the MCX Server responds to a SIP INVITE with a SIP 100 (Trying)	-	-	-	-
2a1	Check: Does the MCX Server respond with a SIP 100 (Trying) message?	<--	SIP 100 Trying	-	P
3	Check: Does the MCX Server respond with a SIP 200 (OK) message?	<--	SIP 200 (OK)	-	P
4	The SS-UE (MCX Client) responds with a SIP ACK message.	-->	SIP ACK	-	-
NOTE: The SS-UE being used is specified in the test case calling the procedure.					

A.2.13.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.13.4-1: SIP INVITE (Step 1, Table A.2.13.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.3.3.4-1

Table A.2.13.4-2: SIP 200 (OK) (Step 3, Table A.2.13.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.3.3.4-2

A.2.14 MCX Participating Terminated session establishment/modification without provisional responses other than 100 Trying

A.2.14.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT or MCVideo.

A.2.14.2 Definition of system information messages

N/A

A.2.14.3 Procedure

Table A.2.14.3-1: MCX Participating Terminated session establishment/modification without provisional responses other than 100 Trying

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCX Client) sends a SIP INVITE requesting the establishment/modification of a call (note)	-->	SIP INVITE	-	-
-	EXCEPTION: Step 2a1 describes behaviour that depends on the MCX Server implementation; the "lower case letter" identifies a step sequence that take place if the MCX Server responds to a SIP INVITE with a SIP 100 (Trying)	-	-	-	-
2a1	Check: Does the MCX Server respond with a SIP 100 Trying?	<--	SIP 100 (Trying)	-	P
3	Check: Does the MCX Server respond with a SIP 200 (OK)?	<--	SIP 200 (OK)	-	P
4	The SS-UE (MCX Client) sends a SIP ACK to acknowledge the session establishment/modification (note)	-->	SIP ACK	-	-
NOTE: The SS-UE being used is specified in the test case calling the procedure.					

A.2.14.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.14.4-1: SIP INVITE (Step 1, Table A.2.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.5.1-1 (note).
NOTE: With condition re_INVITE for session modifications

Table A.2.14.4-1: SIP 200 (OK) (Step 3, Table A.2.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1 with condition INVITE-RSP

A.2.15 MCX Participating Terminated call release

A.2.15.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDATA.

A.2.15.2 Definition of system information messages

N/A

A.2.15.3 Procedure

Table A.2.15.3-1: MCX Participating Terminated call release

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCX Client) sends a SIP BYE request to terminate the MCX session (note)	-->	SIP BYE	-	-
2	Check: Does the MCX Server respond with a SIP 200 (OK) message?	<--	SIP 200 (OK)	-	P
NOTE: The SS-UE being used is specified in the test case calling the procedure.					

A.2.15.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

A.2.16 MCX Participating Originated session establishment/modification without provisional responses other than 100 Trying

A.2.16.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT or MCVideo.

A.2.16.2 Definition of system information messages

N/A

A.2.16.3 Procedure

Table A.2.16.3-1: MCX Participating Originated session establishment/modification without provisional responses other than 100 Trying

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the MCX Server send a SIP INVITE requesting the establishment/modification of a call?	<--	SIP INVITE	-	P
2	The SS-UE (MCX Client) sends a SIP 100 Trying (note)	-->	SIP 100 (Trying)	-	-
3	The SS-UE (MCX Client) responds with a SIP 200 (OK) (note)	-->	SIP 200 (OK)	-	-
4	Check: Does the MCX server send a SIP ACK to acknowledge the session establishment/modification?	<--	SIP ACK	-	P
NOTE: The SS-UE being used is specified in the test case calling the procedure.					

A.2.16.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.16.4-1: SIP INVITE (Step 1, Table A.2.16.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.5.2-1 (note).
NOTE: With condition re_INVITE for session modifications.

Table A.2.16.4-2: SIP 200 (OK) (Step 3, Table A.2.16.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.1-1 with condition INVITE-RSP

A.2.17 MCX Participating Originated call release

A.2.17.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDATA.

A.2.17.2 Definition of system information messages

N/A

A.2.17.3 Procedure

Table A.2.17.3-1: MCX Participating Originated call release

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the MCX Server send a SIP BYE request to terminate the MCX session?	<--	SIP BYE	-	P
2	The SS-UE (MCX Client) responds with a SIP 200 (OK) message (note).	-->	SIP 200 (OK)	-	-

NOTE: The SS-UE being used is specified in the test case calling the procedure.

A.2.17.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5. and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

A.2.18 MCX E2E session establishment/modification without provisional responses other than 100 Trying

A.2.18.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT or MCVideo.

A.2.18.2 Definition of system information messages

N/A

A.2.18.3 Procedure

Table A.2.18.3-1: MCX E2E session establishment/modification without provisional responses other than 100 Trying

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE1 (MCX Client) sends a SIP INVITE requesting the establishment/modification of a call	-->	SIP INVITE	-	-
2	Check: Does the MCX Server forward the SIP INVITE requesting the establishment/modification of a call to SS-UE2 (MCX Client)?	<--	SIP INVITE	-	P
3	The SS-UE2 (MCX Client) sends a SIP 100 Trying	-->	SIP 100 (Trying)	-	-
4	Check: Does the MCX Server respond with a SIP 100 Trying to SS-UE1 (MCX Client)?	<--	SIP 100 (Trying)	-	P
5	The SS-UE2 (MCX Client) responds with a SIP 200 (OK)	-->	SIP 200 (OK)	-	-
6	Check: Does the MCX Server respond with a SIP 200 (OK) to SS-UE1 (MCX Client)?	<--	SIP 200 (OK)	-	P
7	The SS-UE1 (MCX Client) sends a SIP ACK to acknowledge the session establishment/modification	-->	SIP ACK	-	-
8	Check: Does the MCX server send a SIP ACK to acknowledge the session establishment/modification to SS-UE2?	<--	SIP ACK	-	P

A.2.18.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.18.4-1: SIP INVITE (Step 1, Table A.2.18.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.5.1-1 (note).
NOTE: With condition re_INVITE for session modifications.

Table A.2.18.4-2: SIP INVITE (Step 2, Table A.2.18.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.5.2-1 (note).
NOTE: With condition re_INVITE for session modifications.

Table A.2.18.4-1: SIP 200 (OK) (Step 5, Table A.2.18.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.1-1 with condition INVITE-RSP

Table A.2.18.4-1: SIP 200 (OK) (Step 6, Table A.2.18.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1 with condition INVITE-RSP

A.2.19 MCX E2E call release

A.2.19.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCData.

A.2.19.2 Definition of system information messages

N/A

A.2.19.3 Procedure

Table A.2.19.3-1: MCX E2E call release

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE1 (MCX Client) sends a SIP BYE request to terminate the MCX session	-->	SIP BYE	-	-
2	Check: Does the MCX Server respond a SIP BYE request to terminate the MCX session to SS-UE2 (MCX Client)?	<--	SIP BYE	-	P
3	The SS-UE2 (MCX Client) responds with a SIP 200 (OK) message.	-->	SIP 200 (OK)	-	-
4	Check: Does the MCX Server respond a SIP 200 (OK) message to SS-UE1?	<--	SIP 200 (OK)	-	P

A.2.19.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.19.4-1: SIP BYE from the SS-UE1 (Step 1, Table A.2.19.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.2.1-1

Table A.2.19.4-2: SIP BYE from the MCPTT Server (Step 2, Table A.2.19.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.2.2-1

A.2.20 MCX E2E group call establishment, manual commencement

A.2.20.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDData.

A.2.20.2 Definition of system information messages

N/A

A.2.20.3 Procedure

Table A.2.20.3-1: MCX E2E group call establishment, manual commencement

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE1 (MCX Client) sends a SIP INVITE requesting the establishment/modification of a call	-->	SIP INVITE	-	-
2	Check: Does the MCX Server forward the SIP INVITE requesting the establishment/modification of a call to SS-UE2 (MCX Client)?	<--	SIP INVITE	-	P
3	The SS-UE2 (MCX Client) sends a SIP 100 Trying	-->	SIP 100 (Trying)	-	-
4	Check: Does the MCX Server respond with a SIP 100 Trying to SS-UE1 (MCX Client)?	<--	SIP 100 (Trying)	-	P
5	The SS-UE2 (MCX Client) sends a SIP 183 (Session Progress) reliably.	-->	SIP 183 (Session Progress)	-	-
6	Check: Does the MCX Server acknowledge the receipt of SIP 183 (Session Progress) from SS-UE2?	<--	PRACK	-	P
7	The SS-UE2 (MCX Client) responds a SIP 200 (OK) to PRACK message	-->	SIP 200 (OK)	-	-
8	The SS-UE2 (MCX Client) responds with a SIP 200 (OK)	-->	SIP 200 (OK)	-	-
9	Check: Does the MCX Server respond with a SIP 200 (OK) to SS-UE1 (MCX Client)?	<--	SIP 200 (OK)	-	P
10	The SS-UE1 (MCX Client) sends a SIP ACK to acknowledge the session establishment/modification	-->	SIP ACK	-	-
11	Check: Does the MCX server send a SIP ACK to acknowledge the session establishment/modification to SS-UE2?	<--	SIP ACK	-	P

A.2.20.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 with conditions GROUP-CALL (note) and MANUAL; and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

NOTE: For chat group calls, condition CHAT-GROUP-CALL shall be used instead of GROUP-CALL.

Table A.2.20.4-1: SIP 200 (OK) (Step 8, Table A.2.20.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.1-1 with condition INVITE-RSP

Table A.2.20.4-2: SIP 200 (OK) (Step 9, Table A.2.20.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1 with condition INVITE-RSP

A.2.21 MCX E2E private call establishment, manual commencement

A.2.21.1 Initial conditions

As specified in the test case which calls the procedure.

Within the context of this procedure, MCX refers to MCPTT, MCVideo or MCDData.

A.2.21.2 Definition of system information messages

N/A

A.2.21.3 Procedure

Table A.2.21.3-1: MCX E2E private call establishment, manual commencement

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE1 (MCX Client) sends a SIP INVITE requesting the establishment/modification of a call	-->	SIP INVITE	-	-
2	Check: Does the MCX Server forward the SIP INVITE requesting the establishment/modification of a call to SS-UE2 (MCX Client)?	<--	SIP INVITE	-	P
3	The SS-UE2 (MCX Client) sends a SIP 100 Trying	-->	SIP 100 (Trying)	-	-
4	Check: Does the MCX Server respond with a SIP 100 Trying to SS-UE1 (MCX Client)?	<--	SIP 100 (Trying)	-	P
5	The SS-UE2 (MCX Client) sends a SIP 180 (Ringing) unreliably.	-->	SIP 180 (Ringing)	-	-
6	Check: Does the MCX Server respond with a unreliable SIP 180 (Ringing) to SS-UE1 (MCX Client)?	<--	SIP 180 (Ringing)	-	P
7	The SS-UE2 (MCX Client) responds with a SIP 200 (OK)	-->	SIP 200 (OK)	-	-
8	Check: Does the MCX Server respond with a SIP 200 (OK) to SS-UE1 (MCX Client)?	<--	SIP 200 (OK)	-	P
9	The SS-UE1 (MCX Client) sends a SIP ACK to acknowledge the session establishment/modification	-->	SIP ACK	-	-
10	Check: Does the MCX server send a SIP ACK to acknowledge the session establishment/modification to SS-UE2?	<--	SIP ACK	-	P

A.2.21.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 with conditions PRIVATE-CALL and MANUAL; and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.2.21.4-1: SIP 200 (OK) (Step 7, Table A.2.21.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.1-1 with condition INVITE-RSP

Table A.2.21.4-1: SIP 200 (OK) (Step 8, Table A.2.21.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1 with condition INVITE-RSP

A.3 Generic test procedures for MCVideo Server-Client operation

A.3.0 General

The purpose of the procedures specified in the following clauses is to facilitate test description by providing MCVideo procedure sequences which can be referred from the relevant TCs specified in the present document.

The procedures specified are required to ensure that MCVideo service can take place between a MCVideo Client and a MCVideo server or specific MCVideo relevant pre-conditions are met before a test case can be executed.

A.3.1 MCVideo E2E session establishment/modification without provisional responses other than 100 Trying

A.3.1.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.1.2 Definition of system information messages

N/A

A.3.1.3 Procedure

Table A.3.1.3-1: MCVideo E2E session establishment/modification without provisional responses other than 100 Trying

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the IUT (MCVideo Server) correctly perform test procedure MCX E2E session establishment/modification without provisional responses other than 100 Trying' for as described in Table A.2.18.3-1 with MCVideo as MCX?	-	-	-	P
-	EXCEPTION: Step 2a1-2a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place if the SS-UE1 requests implicit transmission control in the SIP INVITE request but it is not implicitly granted (note)	-	-	-	-
2a1	Check: Does the IUT (MCVideo Server) send a Transmission Granted message to SS-UE1?	<--	Transmission Granted	-	P
2a2	IF the Transmission Granted message requires acknowledgement, the SS-UE1 sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
-	EXCEPTION: Step 3a1-3a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place when the transmission is granted to SS-UE1, either implicit or explicitly. (note)	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Media Transmission Notification message to SS-UE2?	<--	Media Transmission Notification	-	P
3a2	IF the Media Transmission Notification message requires acknowledgement, the SS-UE2 sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
-	EXCEPTION: Steps 4a1-4a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place when the transmission is not granted to SS-UE1. (note)	-	-	-	-
4a1	Check: Does the IUT (MCVideo Server) send a Transmission Idle message to SS-UE1?	<--	Transmission Idle	-	P
4a2	Check: Does the IUT (MCVideo Server) send a Transmission Idle message to SS-UE2?	<--	Transmission Idle	-	P
NOTE: Possibilities in SDP-offer/answer depend on the test case requirements: - SS-UE1 sends SDP offer with media description for transmission control but without implicit transmission request. - SS-UE1 sends SDP offer with media description for transmission control and with implicit transmission request: - SDP answer from MCVideo Server contains "mc_implicit_request" and "mc_granted" (Transmission is implicitly granted). - SDP answer from MCVideo Server contains "mc_implicit request" and but no "mc_granted" (Transmission needs to be explicitly granted at step 2a1). - SDP answer from MCVideo Server contains no "mc_implicit_request" and no "mc_granted" (the UE needs to explicitly request the transmission). - SS-UE1 sends SDP offer without media description for transmission control.					

A.3.1.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 with condition MCVIDEO and in the test case calling the procedure with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.3.1.4-1: SIP INVITE from SS-UE1
(Step 1, Table A.3.1.3-1; Step 1, Table A.2.18.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.5.1-1 (note), with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Session-Expires			IETF RFC 4028 [11]	
generic-param	"1800"	The recommended initial value is 1 800 in IETF RFC 4028 [11].		
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table A.3.1.4-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table A.3.1.4-3			
NOTE: With condition re_INVITE for session modifications.				

Table A.3.1.4-2: SDP in SIP INVITE (Table A.3.1.4-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.1.1-2				
Information Element	Value/remark	Comment	Reference	Condition
Session description:				
Origin		o= line		
username	"_"	"_" indicating the concept of user IDs not being supported		
sess-id	"11111111"	A numeric string such that the tuple of <username>, <sess-id>, <nettype>, <addrtype>, and <unicast-address> forms a globally unique identifier for the session.		
sess-version	"11111111"			
Session Name	" "	s= line single empty space indicating no session name		
Bandwidth		b= line		
"AS"	352			
Media description[1]		Media description for audio		
media description		m= line media = audio	IETF RFC 4867 [16]	
port	port number assigned by the SS-UE1 (even integer)	The transport port to which the media stream is sent	IETF RFC 6335 [17] clause 6	
fmt	"99"	RTP/SAVP payload type for AMR-WB is dynamic		
Connection Data		c= line		
connection-address	IP address of the SS-UE1			
Bandwidth		b= line		
"AS"	37		ETSI TS 126 114 [15] (3GPP TS 26.114) Table K.6	
"RS"	0		IETF RFC 3556 [18]	
"RR"	2000		IETF RFC 3556 [18]	
media attribute		a= line attribute = rtpmap		
rtpmap	"rtpmap"			
payload type	"99"			
encoding parameter	"1"	Channel number		
media attribute		a= line attribute = fmp		

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.1.1-2				
Information Element	Value/remark	Comment	Reference	Condition
fntp	"fntp"			
format	"99"			
media attribute		a= line attribute =ptime		
ptime	"20"	packet time		
media attribute		a= line attribute =maxptime		
maxptime	"240"	maximum packet time		
Media description[2]		Media description for video		
media description		m= line media = video SDP media-level section for a media-transmission control entity		
port	port number of the audio stream incremented by 2 (resulting in even integer)	The transport port from which the media stream is sent		
fmt	"100"			
Connection Data		c= line		
connection-address	IP address of the SS-UE1			
Bandwidth		b= line		
"AS"	315			
"RS"	0		IETF RFC 3556 [18]	
"RR"	2500		IETF RFC 3556 [18]	
media attribute		a= line attribute = rtpmap		
rtpmap	"rtpmap"			
payload type	"100"			
media attribute		a= line attribute = fntp		
fntp	"fntp"			
format	"100"			
format specific parameters		Parameters the H264 codec	IETF RFC 6184 [24]	
packetization-mode	"0"			
profile-level-id	"42e00c"			
Media description[3]		Media description for media control		NOT WITHOUT_ TRANSMIS SIONCONT ROL
media description		m= line media = application SDP media-level section for a media control entity		
port	port number assigned by the SS-UE1 being different than the port number of the audio and video channels (RTP) and its associated control channel (RTCP)"	The port for the media control entity		
Connection Data		c= line		
connection-address	IP address of the SS-UE1			
media attribute		a= line attribute = fntp		
fntp				
format	"MCVideo"			
format specific parameters				
mc_queueing	not present			

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.1.1-2				
Information Element	Value/remark	Comment	Reference	Condition
	present	Parameter has no value	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 14.2.2	pc_MCVideo_TransmissionRequestQueueing
mc_priority	The priority value specified in the MCVideo Group configuration	The value of the <user-priority> element for the user in the MCVideo Group Configuration (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.7.2-1) See note 4	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 14.2.3	GROUP-CALL OR CHAT-GROUP-CALL
mc_priority	The max priority value specified in the MCVideo Service configuration	The value of the <num-levels-priority-hierarchy> element for on-network in the MCVideo Service Configuration (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1)	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 14.2.3	PRIVATE-CALL
mc_reception_priority	The priority value specified in the MCVideo Group configuration	The value of the <user-reception-priority> element for the user in the MCVideo Group Configuration (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.7.2-1) See note 5.	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 14.2.6	GROUP-CALL OR CHAT-GROUP-CALL
mc_reception_priority	The max priority value specified in the MCVideo Service configuration	The value of the <num-levels-priority-hierarchy> element for on-network in the MCVideo Service Configuration (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1)	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 14.2.6	PRIVATE-CALL
NOTE 1: If the SS-UE requests a call with media transmission control and implicit transmission (Option b of note on Table A.3.1.3-1), apply condition IMPLICIT_GRANT_REQUESTED. NOTE 2: If the SS-UE requests a call without media transmission (Option c of NOTE1 on Table A.3.1.3-1), apply condition WITHOUT_TRANSMISSIONCONTROL. NOTE 3: With condition INITIAL_SDP_OFFER if condition re_INVITE is not in use for Table A.3.1.4-1. Otherwise, apply condition SDP_OFFER. NOTE 4: the <num-levels-priority-hierarchy> element for on-network in the MCVideo Service Configuration has higher value than any <user-priority> element. (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1) NOTE 5: The <num-levels-priority-hierarchy> element for on-network in the MCVideo Service Configuration has higher value than any <user-reception-priority> element. (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1).				

Table A.3.1.4-3: MCVideo-Info in SIP INVITE (Table A.3.1.4-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.1-2, condition INVITE REFER

Table A.3.1.4-4: SIP INVITE from the IUT (MCVideo-Server)
(Step 1, Table A.3.1.3-1; Step 2 Table A.2.18.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.5.2-1 (note), with condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Resource-Priority			IETF RFC 4412 [19] IETF RFC 7134 [21] IETF RFC 8101 [20]	EMERGENCY-CALL or IMPERIL-CALL
r-value				EMERGENCY-CALL
namespace	value of the <resource-priority-namespace> element contained in the <emergency-resource-priority> element contained in the <OnNetwork> element of the MCX service configuration documents	As configured in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1 for MCVideo		
r-priority	value of the <resource-priority-priority> element contained in the <emergency-resource-priority> element contained in the <OnNetwork> element of the MCX service configuration document	As configured in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1 for MCVideo		
r-value				IMPERIL-CALL
namespace	value of the <resource-priority-namespace> element contained in the <imminent-peril-resource-priority> element contained in the <OnNetwork> element of the MCX service configuration documents	As configured in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1 for MCVideo		
r-priority	value of the <resource-priority-priority> element contained in the <imminent-peril-resource-priority> element contained in the <OnNetwork> element of the MCX service configuration document	As configured in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1 for MCVideo		
Session-Expires			IETF RFC 4028 [11]	
delta-seconds	any allowed value			
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table A.3.1.4-5			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table A.3.1.4-6			
NOTE: With condition re_INVITE for session modifications.				

Table A.3.1.4-5: SDP in SIP INVITE (Table A.3.1.4-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.1.2-2				
Information Element	Value/remark	Comment	Reference	Condition
Media description[3]				NOT WITHOUT_TRANSMISSIONCONTROL
media attribute		a= line attribute = fntp		
fntp				
format	"MCVideo"			
format specific parameters				
mc_priority	Any value lower or equal to the priority specified in the MCVideo Group configuration	The value of the <user-priority> element for the user in the MCVideo Group Configuration (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.7.2-1) See note 3.	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 14.2.3	GROUP-CALL OR CHAT-GROUP-CALL
mc_priority	Any value lower or equal to the priority specified in the MCVideo Service configuration	The value of the <num-levels-priority-hierarchy> element for on-network in the MCVideo Service Configuration (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1)	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 14.2.3	PRIVATE-CALL
NOTE 1: If the SS-UE1 requests a call without media transmission control (Option c of note on Table A.3.1.3-1), apply condition WITHOUT_TRANSMISSIONCONTROL.				
NOTE 2: With condition INITIAL_SDP_OFFER if condition re_INVITE is not in use for Table A.3.1.4-3. Otherwise, apply condition SDP_OFFER.				
NOTE 3: The <num-levels-priority-hierarchy> element for on-network in the MCVideo Service Configuration has higher value than any <user-priority> element. (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1).				

Table A.3.1.4-6: MCVideo-Info in SIP INVITE (Table A.3.1.4-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	Encrypted (note) <mcvideo-request-uri> with mcvideoURI set to px_MCVideo_ID_User_B	The URI of the called user		
mcvideo-calling-user-id	Encrypted (note) <mcvideo-calling-user-id> with mcvideoURI set to px_MCVideo_ID_User_A	The URI of the calling user		
NOTE: Encrypted element as described in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.2.2-2A.				

Table A.3.1.4-7: SIP 200 (OK) from SS-UE2
(Step 1, Table A.3.1.3-1; Step 5, Table A.2.18.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.1-1, with condition MCVIDEO and INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type			IETF RFC 5621 [22]	
value	"application/sdp"			
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table A.3.1.4-8			

Table A.3.1.4-8: SDP in SIP 200 (OK) (Table A.3.1.4-7)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.1.1-2, condition SDP_ANSWER. NOTE: If the SS-UE1 requests a call without media transmission control (Option c of note on Table A.3.1.3-1), apply condition WITHOUT_TRANSMISSIONCONTROL.				
Information Element	Value/remark	Comment	Reference	Condition
Session description:				
Origin		o= line		
username	"_"	"_" indicating the concept of user IDs not being supported		
sess-id	"11111111"	A numeric string such that the tuple of <username>, <sess-id>, <nettype>, <addrttype>, and <unicast-address> forms a globally unique identifier for the session.		
sess-version	"11111111"			
Session Name	" "	s= line single empty space indicating no session name		
Bandwidth		b= line		
"AS"	352			
Media description[1]		Media description for audio		
media description		m= line media = audio	IETF RFC 4867 [16]	
port	port number assigned by the SS-UE2 (even integer)	The transport port to which the media stream is sent	IETF RFC 6335 [17] clause 6	
fmt	"99"	RTP/SAVP payload type for AMR-WB is dynamic		
Connection Data		c= line		
connection-address	IP address of the SS-UE2			
Bandwidth		b= line		
"AS"	37		ETSI TS 126 114 [15] (3GPP TS 26.114) Table K.6	
"RS"	0		IETF RFC 3556 [18]	
"RR"	2000		IETF RFC 3556 [18]	
media attribute		a= line attribute = rtpmap		
rtpmap	"rtpmap"			
payload type	"99"			
encoding parameter	"1"	Channel number		
media attribute		a= line attribute = fmltp		
fmltp	"fmltp"			
format	"99"			

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.1.1-2, condition SDP_ANSWER.

NOTE: If the SS-UE1 requests a call without media transmission control (Option c of note on Table A.3.1.3-1), apply condition WITHOUT_TRANSMISSIONCONTROL.

Information Element	Value/remark	Comment	Reference	Condition
media attribute		a= line attribute =ptime		
ptime	"20"	packet time		
media attribute		a= line attribute =maxptime		
maxptime	"240"	maximum packet time		
Media description[2]		Media description for video		
media description		m= line media = video SDP media-level section for a media-transmission control entity		
port	port number of the audio stream incremented by 2 (resulting in even integer)	The transport port from which the media stream is sent		
fmt	"100"			
Connection Data		c= line		
connection-address	IP address of the SS-UE2			
Bandwidth		b= line		
"AS"	315			
"RS"	0		IETF RFC 3556 [18]	
"RR"	2500		IETF RFC 3556 [18]	
media attribute		a= line attribute = rtpmap		
rtpmap	"rtpmap"			
payload type	"100"			
media attribute		a= line attribute = fmltp		
fmltp	"fmltp"			
format	"100"			
format specific parameters	same parameters and values as sent in the corresponding SDP offer	Parameters the H264 codec		
Media description[3]		Media description for media control		NOT WITHOUT_TRANSMISSIONCONTROL
media description		m= line media = application SDP media-level section for a media control entity		
port	port number assigned by the SS-UE2 being different than the port number of the audio and video channels (RTP) and its associated control channel (RTCP)"	The port for the media control entity		
Connection Data		c= line		
connection-address	IP address of the SS-UE2			

**Table A.3.1.4-9: SIP 200 (OK) from IUT (MCVideo Server)
(Step 1, Table A.3.1.3-1; Step 6, Table A.2.18.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.17.1.2-1 with condition MCVIDEO and INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Session-Expires				
generic-param	Same value as session expires header in SIP INVITE or lower			
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table A.3.1.4-10			

Table A.3.1.4-10: SDP in SIP 200 (OK) (Table A.3.1.4-9)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.1.2-2, condition SDP_ANSWER.				
NOTE 1: If the SS-UE requests an implicit transmission (Option b of NOTE 1 on Table A.3.1.3-1), more conditions may apply:				
i. If the server implicitly grants the transmission, conditions IMPLICIT_GRANT_REQUESTED and IMPLICIT_FLOOR_GRANTED are also applied.				
ii. If the transmission needs to be explicitly granted, condition IMPLICIT_GRANT_REQUESTED applies.				
NOTE 2: If the SS-UE requests a call without media transmission (Option c of NOTE 1 on Table A.3.1.3-1) apply condition WITHOUT_TRANSMISSIONCONTROL.				
NOTE 3: Elements whose values mention the SS shall be understood as if they were referring to the MCVideo Server.				
Information Element	Value/remark	Comment	Reference	Condition
Media description[3]				NOT WITHOUT_TRANSMISSIONCONTROL
media attribute		a= line attribute = fmtp		
fmtp				
format	"MCVideo"			
format specific parameters				
mc_priority	if a value is provided in the offer: the value defined in the MCVideo Group Configuration or the value provided in the offer, whichever is the lower value; otherwise not present	The value of the <user-priority> element for the user in the MCVideo Group Configuration (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.7.2-1)	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 14.2.3	GROUP-CALL OR CHAT-GROUP-CALL
mc_priority	if a value is provided in the offer: the value defined in the MCVideo Service Configuration or the value provided in the offer, whichever is the lower value; otherwise not present	The value of the <num-levels-priority-hierarchy> element for on-network in the MCVideo Service Configuration (ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.8.8-1)	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 14.2.3	PRIVATE-CALL

Table A.3.1.4-11: Transmission Granted (Step 2a1, Table A.3.1.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.1-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Table A.3.1.4-12: Media Transmission Notification (Step 3a1, Table A.3.1.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.7-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.				
Information Element	Value/remark	Comment	Reference	Condition
User Id of the Transmitting User		User ID of the user transmitting the media	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.6	
User Id of the Transmitting User	px_MCVideo_ID_User_A			
Audio SSRC of the Transmitting User	Media/Audio SSRC of remote client (Client A)	SSRC of the user transmitting the media	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.16	
Functional Alias	Not present			
	px_MCVideo_ID_FA_A	functional alias URI of the transmitting user	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.21	FA

Table A.3.1.4-13: Transmission Idle (Steps 4a1 and 4a2, Table A.3.1.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.16-1.

Table A.3.1.4-14: Transmission Control Ack (Steps 2a2 and 3a2, Table A.3.1.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

A.3.2 MCVideo E2E group call establishment, manual commencement

A.3.2.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.2.2 Definition of system information messages

N/A

A.3.2.3 Procedure

Table A.3.2.3-1: MCVideo E2E group call establishment, manual commencement

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the IUT (MCVideo Server) correctly perform test procedure MCX E2E group call establishment, manual commencement' as described in Table A.2.20.3-1 with MCVideo as MCX?	-	-	-	P
-	EXCEPTION: Step 2a1-2a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place if the SS-UE1 requests implicit transmission control in the SIP INVITE request but it is not implicitly granted (note)	-	-	-	-
2a1	Check: Does the IUT (MCVideo Server) send a Transmission Granted message to SS-UE1?	<--	Transmission Granted	-	P
2a2	IF the Transmission Granted message requires acknowledgement, the SS-UE1 sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
-	EXCEPTION: Step 3a1-3a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place when the transmission is granted to SS-UE1, either implicit or explicitly. (note)	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Media Transmission Notification message to SS-UE2?	<--	Media Transmission Notification	-	P
3a2	IF the Media Transmission Notification message requires acknowledgement, the SS-UE2 sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
-	EXCEPTION: Steps 4a1-4a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place when the transmission is not granted to SS-UE1. (note)	-	-	-	-
4a1	Check: Does the IUT (MCVideo Server) send a Transmission Idle message to SS-UE1?	<--	Transmission Idle	-	P
4a2	Check: Does the IUT (MCVideo Server) send a Transmission Idle message to SS-UE2?	<--	Transmission Idle	-	P
NOTE: Possibilities in SDP-offer/answer depend on the test case requirements: - SS-UE1 sends SDP offer with media description for transmission control but without implicit transmission request. - SS-UE1 sends SDP offer with media description for transmission control and with implicit transmission request: - SDP answer from MCVideo Server contains "mc_implicit_request" and "mc_granted" (Transmission media request is implicitly granted). - SDP answer from MCVideo Server contains "mc_implicit request" and but no "mc_granted" (Transmission media request needs to be explicitly granted at step 2a1). - SDP answer from MCVideo Server contains no "mc_implicit_request" and no "mc_granted" (the UE needs to explicitly send the Transmission media request).					

A.3.2.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 with condition MCVIDEO and in the test case calling the procedure with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

**Table A.3.2.4-1: SIP INVITE from the SS-UE1
(Step 1, Table A.3.2.3-1; Step 1, Table A.2.20.3-1)**

Derivation Path: Table A.3.1.4-1, with 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 A.3.1.4-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table A.3.2.4-2			

Table A.3.2.4-2: MCVideo-Info in SIP INVITE (Table A.3.2.4-1)

Derivation Path: Table A.3.1.4-5, with condition GROUP-CALL (note).
NOTE: For chat group calls CHAT-GROUP-CALL condition shall be used instead of GROUP-CALL.

**Table A.3.2.4-3: SIP INVITE from the MCVideo-Server
(Step 1, Table A.3.2.3-1; Step 2, Table A.2.20.3-1)**

Derivation Path: Table A.3.1.4-4, with 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 A.3.1.4-5			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table A.3.2.4-4			

Table A.3.2.4-4: MCVideo-Info in SIP INVITE (Table A.3.2.4-3)

Derivation Path: Table A.3.1.4-6, with condition GROUP-CALL (note).
NOTE: For chat group calls CHAT-GROUP-CALL condition shall be used instead of GROUP-CALL.

**Table A.3.2.4-5: SIP 200 (OK) from the SS-UE2
(Step 1, Table A.3.2.3-1; Step 8, Table A.2.20.3-1)**

Derivation Path: Table A.3.1.4-7, with condition GROUP-CALL (note).
NOTE: For chat group calls CHAT-GROUP-CALL condition shall be used instead of GROUP-CALL.

**Table A.3.2.4-6: SIP 200 (OK) from the MCVideo Server
(Step 1, Table A.3.2.3-1; Step 9, Table A.2.20.3-1)**

Derivation Path: Table A.3.1.4-9

**Table A.3.2.4-7: SIP 183 (Session Progress) from the SS-UE2
(Step 1, Table A.3.2.3-1; Step 5, Table A.2.20.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.16.3.1-1, with condition MCVIDEO and 100rel

Table A.3.2.4-8: Transmission Granted (Step 2a1, Table A.3.2.3-1)

Derivation Path: Table A.3.1.4-11

Table A.3.2.4-9: Media Transmission Notification (Step 3a1, Table A.3.2.3-1)

Derivation Path: Table A.3.1.4-12

Table A.3.2.4-10: Transmission Idle (Steps 4a1 and 4a2, Table A.3.2.3-1)

Derivation Path: Table A.3.1.4-13

Table A.3.2.4-11: Transmission Control Ack (Steps 2a2 and 3a2, Table A.3.2.3-1)

Derivation Path: Table A.3.1.4-14

A.3.3 MCVideo E2E private call establishment, manual commencement

A.3.3.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.3.2 Definition of system information messages

N/A

A.3.3.3 Procedure

Table A.3.3.3-1: MCVideo E2E private call establishment, manual commencement

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the IUT (MCVideo Server) correctly perform test procedure MCX E2E private call establishment, manual commencement' as described in Table A.2.21.3-1 with MCVideo as MCX?	-	-	-	P
-	EXCEPTION: Step 2a1-2a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place if the SS-UE1 requests implicit transmission control in the SIP INVITE request but it is not implicitly granted (NOTE1)	-	-	-	-
2a1	Check: Does the IUT (MCVideo Server) send a Transmission Granted message to SS-UE1?	<--	Transmission Granted	-	P
2a2	IF the Transmission Granted message requires acknowledgement, the SS-UE1 sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
-	EXCEPTION: Step 3a1-3a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place when the transmission is granted to SS-UE1, either implicit or explicitly. (NOTE1)	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Media Transmission Notification message to SS-UE2?	<--	Media Transmission Notification	-	P
3a2	IF the Media Transmission Notification message requires acknowledgement, the SS-UE2 sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
-	EXCEPTION: Steps 4a1-4a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place when the transmission is not granted to SS-UE1. (NOTE1)	-	-	-	-
4a1	Check: Does the IUT (MCVideo Server) send a Transmission Idle message to SS-UE1?	<--	Transmission Idle	-	P
4a2	Check: Does the IUT (MCVideo Server) send a Transmission Idle message to SS-UE2?	<--	Transmission Idle	-	P
NOTE: Possibilities in SDP-offer/answer depend on the test case requirements: - SS-UE1 sends SDP offer with media description for transmission control but without implicit transmission request. - SS-UE1 sends SDP offer with media description for transmission control and with implicit transmission request: - SDP answer from MCVideo Server contains "mc_implicit_request" and "mc_granted" (Transmission is implicitly granted). - SDP answer from MCVideo Server contains "mc_implicit request" and but no "mc_granted" (Transmission needs to be explicitly granted at step 2a1). - SDP answer from MCVideo Server contains no "mc_implicit_request" and no "mc_granted" (the UE needs to explicitly request the transmission). - SS-UE1 sends SDP offer without media description for transmission control.					

A.3.3.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 with condition MCVIDEO and in the test case calling the procedure with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

**Table A.3.3.4-1: SIP INVITE from the SS-UE1
(Step 1, Table A.3.3.3-1; Step 1, Table A.2.21.3-1)**

Derivation Path: Table A.3.1.4-1, with condition PRIVATE-CALL and MANUAL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-body	SDP Message as described in Table A.3.3.4-2			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table A.3.3.4-3			

Table A.3.3.4-2: SDP in SIP INVITE (Table A.3.3.4-1)

Derivation Path: Table A.3.1.4.2-2, with condition PRIVATE-CALL

Table A.3.3.4-3: MCVideo-Info in SIP INVITE (Table A.3.3.4-1)

Derivation Path: Table A.3.1.4-3, with condition PRIVATE-CALL

**Table A.3.3.4-4: SIP INVITE from the MCVideo-Server to SS-UE2
(Step 1, Table A.3.3.3-1; Step 2, Table A.2.21.3-1)**

Derivation Path: Table A.3.1.4-4, with 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 A.3.1.4-5			
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table A.3.3.4-5			

Table A.3.3.4-5: MCVideo-Info in SIP INVITE (Table A.3.3.4-4)

Derivation Path: Table A.3.1.4-6, with condition PRIVATE-CALL

**Table A.3.3.4-6: SIP 200 (OK) from the SS-UE2 to MCVideo Server
(Step 1, Table A.3.3.3-1; Step 7, Table A.2.21.3-1)**

Derivation Path: Table A.3.1.4-7

**Table A.3.3.4-7: SIP 200 (OK) from the MCVideo Server to SS-UE1
(Step 1, Table A.3.3.3-1; Step 8, Table A.2.21.3-1)**

Derivation Path: Table A.3.1.4-9

**Table A.3.3.4-8: SIP 180 (Ringing) response
(Step 1, Table A.3.3.3-1; Steps 5, Table A.2.21.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.16.2.1-1, with condition MCVIDEO

**Table A.3.3.4-9: SIP 180 (Ringing) response
(Step 1, Table A.3.3.3-1; Steps 6, Table A.2.21.3-1)**

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.16.2.2-1, with condition MCVIDEO

Table A.3.3.4-10: Transmission Granted (Step 2a1, Table A.3.3.3-1)

Derivation Path: Table A.3.1.4-11

Table A.3.3.4-11: Media Transmission Notification (Step 3a1, Table A.3.3.3-1)

Derivation Path: Table A.3.1.4-12

Table A.3.3.4-12: Transmission Idle (Steps 4a1 and 4a2, Table A.3.3.3-1)

Derivation Path: Table A.3.1.4-13

Table A.3.3.4-13: Transmission Control Ack (Steps 2a2 and 3a2, Table A.3.3.3-1)

Derivation Path: Table A.3.1.4-14

A.3.4 MCVideo Participating Terminated session establishment/modification without provisional responses other than 100 Trying

A.3.4.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.4.2 Definition of system information messages

N/A

A.3.4.3 Procedure

Table A.3.4.3-1: MCVideo Participating Terminated session establishment/modification without provisional responses other than 100 Trying

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the MCVideo server correctly perform test procedure 'MCX Participating Terminated session establishment/modification without provisional responses other than 100 Trying' for as described in Table A.2.14.3-1 with MCVideo as MCX? (Note 2)	-	-	-	P
-	EXCEPTION: Step 2a1-2a2 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place if the SS-UE requests implicit transmission control in the SIP INVITE request but it is not implicitly granted (Note 1)	-	-	-	-
2a1	Check: Does the MCVideo server send a Transmission Granted message to SS-UE?	<--	Transmission Granted	-	P
2a2	IF the Transmission Granted message requires acknowledgement, the SS-UE sends a Transmission Control ACK message.	-->	Transmission Control Ack	-	-
-	EXCEPTION: Step 3a1 describes behaviour that depends on the test case requirements; the "lower case letter" identifies a step sequence that takes place when the transmission is not granted to SS-UE. (Note 1)	-	-	-	-
3a1	Check: Does the MCVideo server send a Transmission Idle message to SS-UE?	<--	Transmission Idle	-	P
NOTE 1: Possibilities in SDP-offer/answer depend on the test case requirements: - SS-UE sends SDP offer with media description for transmission control but without implicit transmission request. - SS-UE sends SDP offer with media description for transmission control and with implicit transmission request: - SDP answer from MCVideo Server contains "mc_implicit_request" and "mc_granted" (Transmission is implicitly granted). - SDP answer from MCVideo Server contains "mc_implicit request" and but no "mc_granted" (Transmission needs to be explicitly granted at step 2a1). - SDP answer from MCVideo Server contains no "mc_implicit_request" and no "mc_granted" (the UE needs to explicitly request the transmission). - SS-UE sends SDP offer without media description for transmission control. NOTE 2: The SS-UE being used is specified in the test case calling the procedure.					

A.3.4.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 with condition MCVIDEO and in the test case calling the procedure with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

**Table A.3.4.4-1: SIP INVITE from SS-UE
(Step 1, Table A.3.4.3-1; Step 1, Table A.2.14.3-1)**

Derivation Path: Table A.3.1.4-1

**Table A.3.4.4-2: SIP 200 (OK) from IUT (MCVideo Server)
(Step 1, Table A.3.4.3-1; Step 3, Table A.2.14.3-1)**

Derivation Path: Table A.3.1.4-9

Table A.3.4.4-3: Transmission Granted (Step 2a1, Table A.3.4.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.1-1, with condition ACK IF the IUT (MCVideo Server) requests message acknowledgement.

Table A.3.4.4-4: Transmission Idle (Step 3a1, Table A.3.4.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.16-1.

Table A.3.4.4-5: Transmission Control Ack (Step 2a2, Table A.3.4.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

A.3.5 MCVideo Group Affiliation Status Determination and Subscription

A.3.5.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.5.2 Definition of system information messages

N/A

A.3.5.3 Procedure

Table A.3.5.3-1: MCVideo Group affiliation status determination and subscription

Same procedure as defined in: Table A.2.7.3-1

A.3.5.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCVideo Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCVideo Client) or SS-UE2 (MCVideo Client).

Table A.3.5.4-1: SIP SUBSCRIBE (Step 1, Table A.3.5.3-1)

Derivation Path: Table A.2.7.4-1, conditions MCVIDEO and PRESENCE-EVENT

Table A.3.5.4-2: SIP NOTIFY (Step 3, Table A.3.5.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.2.8-1, conditions MCVIDEO and PRESENCE-EVENT				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.2.2.5	
MIME-part-body	PIDF as described in Table A.3.5.4-3			

Table A.3.5.4-3: PIDF in SIP NOTIFY (Table A.3.5.4-2)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2 (note)
NOTE: PIDF document contains tuple with empty <status> element

A.3.6 MCVideo Group Affiliation Status Change

A.3.6.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.6.2 Definition of system information messages

N/A

A.3.6.3 Procedure

Table A.3.6.3-1: MCVideo Group Affiliation Status Change

Same procedure as defined in Table A.2.12.3-1

A.3.6.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCVideo Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCVideo Client) or SS-UE2 (MCVideo Client).

Table A.3.6.4-1: SIP PUBLISH (Step 1, Table A.3.6.3-1)

Derivation Path: Table A.2.12.4-1, condition MCVIDEO

Table A.3.6.4-2: PIDF in SIP PUBLISH (Table A.3.6.4-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.1-2, condition AFFILIATION

Table A.3.6.4-3: SIP 200 (OK) (Step 2, Table A.3.6.3-1)

Derivation Path: Table A.2.12.4-5				
Information Element	Value/remark	Comment	Reference	Condition
Expires			IETF RFC 3261 [10] IETF RFC 3903 [23]	
value	same value as in the request or lower			

Table A.3.6.4-4: SIP NOTIFY (Step 3, Table A.3.6.3-1)

Derivation Path: Table A.2.12.4-6, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.2.2.5	
MIME-part-body	PIDF as described in Table A.3.6.4-5			

Table A.3.6.4-5: PIDF in SIP NOTIFY (Table A.3.6.4-4)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
tuple				
status				
affiliation				
status	"affiliating"			
expires	Current time plus the value set in the Expires header of the SIP PUBLISH response.		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.2.3.5	
..p-id	same value as received in the SIP PUBLISH message.			

Table A.3.6.4-6: SIP NOTIFY (Step 5, Table A.3.6.3-1)

Derivation Path: Table A.2.12.4-6, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		PIDF	ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.2.2.5	
MIME-part-body	PIDF as described in Table A.3.6.4-7			

Table A.3.6.4-7: PIDF in SIP NOTIFY (Table A.3.6.4-5)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.3.5.2-2, condition AFFILIATION				
Information Element	Value/remark	Comment	Reference	Condition
presence				
tuple				
status				
affiliation				
status	"affiliated"			
expires	Current time plus the value set in the Expires header of the SIP PUBLISH response.		ETSI TS 124 281 [8] (3GPP TS 24.281) clause 8.2.2.3.5	
..p-id	same value as received in the SIP PUBLISH message.			

A.3.7 MCVideo Transmission Request - Granted and Media Transmission Notification

A.3.7.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.7.2 Definition of system information messages

N/A

A.3.7.3 Procedure

Table A.3.7.3-1: MCVideo Transmission Request - Granted and Media Transmission Notification

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE1 (MCVideo Client) sends a Transmission Request message, with acknowledgement. (note)	-->	Transmission Request	-	-
2	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
-	EXCEPTION: Steps 3a1-3b2 describe behaviour that depends on the MCVideo Server implementation; the "lower case letter" identifies a step sequence that takes place if the MCVideo Server requests or not acknowledgement of sent transmission control messages.	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Transmission Granted message to SS-UE1 with acknowledgement? (note)	<--	Transmission Granted	-	P
3a2	The SS-UE1 (MCVideo Client) sends a Transmission Control Ack message in response to the Transmission Granted message. (note)	-->	Transmission Control Ack	-	-
3a3	Check: Does the IUT (MCVideo Server) send a Media Transmission Notification message to SS-UE2 with acknowledgement? (note)	<--	Media Transmission Notification	-	P
3a4	The SS-UE2 (MCVideo Client) sends a Transmission Control Ack message in response to the Media Transmission Notification message. (note)	-->	Transmission Control Ack	-	-
3b1	Check: Does the IUT (MCVideo Server) send a Transmission Granted message to SS-UE1 with no acknowledgement?	<--	Transmission Granted	-	P
3b2	Check: Does the IUT (MCVideo Server) send a Media Transmission Notification message to SS-UE2 with no acknowledgement? (note)	<--	Media Transmission Notification	-	P
NOTE: SS-UEs may switch, depending on the test case calling this procedure.					

A.3.7.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.3.7.4-1: Transmission Request (Step 1, Table A.3.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.1.1-1, with condition ACK

Table A.3.7.4-2: Transmission Granted (Step 3b1, Table A.3.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.1-1

Table A.3.7.4-3: Transmission Granted (Step 3a1, Table A.3.7.3-1)

Derivation Path: Table A.3.7.4-2, with condition ACK

Table A.3.7.4-4: Media Transmission Notification (Step 3b2, Table A.3.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.7-1				
Information Element	Value/remark	Comment	Reference	Condition
User Id of the Transmitting User		User ID of the user transmitting the media	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.6	
User Id of the Transmitting User	px_MCVidéo_ID_User_A			
Audio SSRC of the Transmitting User	Media/Audio SSRC of remote client (Client A)	SSRC of the user transmitting the media	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.16	
Functional Alias	Not present			
	px_MCVidéo_ID_FA_A	functional alias URI of the transmitting user	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.21	FA

Table A.3.7.4-5: Media Transmission Notification (Step 3a3, Table A.3.7.3-1)

Derivation Path: Table A.3.7.4-4, with condition ACK

Table A.3.7.4-6: Transmission Control Ack (Steps 3a2 and 3a4, Table A.3.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table A.3.7.4-7: Transmission Control Ack (Steps 2, Table A.3.7.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition DOWNLINK

A.3.8 MCVideo Transmission End Request - Idle and Transmission End Notify

A.3.8.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.8.2 Definition of system information messages

N/A

A.3.8.3 Procedure

Table A.3.8.3-1: MCVideo Transmission End Request - Idle and Transmission End Notify

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE1 (MCVideo Client) sends a Transmission End Request message, with acknowledgement. (Note 1)	-->	Transmission End Request	-	-
2	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
-	EXCEPTION: Steps 3a1-3b2 describe behaviour that depends on the MCVideo Server implementation; the "lower case letter" identifies a step sequence that takes place if the MCVideo Server requests or not acknowledgement of sent transmission control messages.	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Transmission End Response message to SS-UE1 (MCVideo Client) with acknowledgement? (Note 1)	<--	Transmission End Response	-	P
3a2	The SS-UE1 (MCVideo Client) sends a Transmission Control Ack message in response to the Transmission End Response message. (Note 1)	-->	Transmission Control Ack	-	-
3a3	Check: Does the IUT (MCVideo Server) send a Transmission End Notify message to SS-UE2 (MCVideo Client) with acknowledgement? (Notes 1 and 2)	<--	Transmission End Notify	-	P
3a4	The SS-UE2 (MCVideo Client) sends a Transmission Control Ack message in response to the Transmission End Notify message. (Note 1)	-->	Transmission Control Ack	-	-
-	EXCEPTION: Steps 3aA1-3aA4 describe behaviour that depends on the test case calling this procedure; the "upper case letter" identifies a step sequence that takes place if SS-UE2 has previously requested media reception by performing procedure 'MCVideo Media Reception Request and Response', as described in Table A.3.9.3-1.	-	-	-	-
3aA1	Check: Does the IUT (MCVideo Server) send a Media Reception End Request message to SS-UE2 (MCVideo Client) with acknowledgement? (Note 1)	<--	Media Reception End Request	-	P
3aA2	The SS-UE2 (MCVideo Client) sends a Transmission Control Ack message in response to the Media Reception End Request message. (Note 1)	-->	Transmission Control Ack	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
3aA3	The SS-UE2 (MCVideo Client) sends a Media Reception End Response message, with acknowledgement. (Note 1)	-->	Media Reception End Response	-	-
3aA4	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
3b1	Check: Does the IUT (MCVideo Server) send a Transmission End Response message to SS-UE1 (MCVideo Client) with no acknowledgement? (Note 1)	<--	Transmission End Response	-	P
3b2	Check: Does the IUT (MCVideo Server) send a Transmission End Notify message to SS-UE2 (MCVideo Client) with no acknowledgement? (Notes 1 and 2)	<--	Transmission End Notify	-	P
-	EXCEPTION: Steps 3bA1-3bA3 describe behaviour that depends on the test case calling this procedure; the "upper case letter" identifies a step sequence that takes place if SS-UE2 (MCVideo Client) has previously requested media reception by performing procedure 'MCVideo Media Reception Request and Response', as described in Table A.3.9.3-1.	-	-	-	-
3bA1	Check: Does the IUT (MCVideo Server) send a Media Reception End Request message to SS-UE2 (MCVideo Client) with no acknowledgement? (Note 1)	<--	Media Reception End Request	-	P
3bA2	The SS-UE2 (MCVideo Client) sends a Media Reception End Response message, with acknowledgement. (Note 1)	-->	Media Reception End Response	-	-
3bA3	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
4	Check: Does the IUT (MCVideo Server) send a Transmission Idle message to SS-UE1 (MCVideo Client)?	<--	Transmission Idle	-	P
5	Check: Does the IUT (MCVideo Server) send a Transmission Idle message to SS-UE2 (MCVideo Client)?	<--	Transmission Idle	-	P
NOTE 1: SS-UEs may switch, depending on the test case calling this procedure.					
NOTE 2: According to ETSI TS 124 581 [9] (3GPP TS 24.581), sections 6.3.7.3.7 and 6.3.7.4.7, the MCVideo Server sends a Transmission End Notify message when it has stopped receiving RTP media packets from the transmitter participant.					

A.3.8.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.3.8.4-1: Transmission End Request (Step 1, Table A.3.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.1-1, with conditions ACK and UPLINK

Table A.3.8.4-2: Transmission End Response (Step 3b1, Table A.3.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.2-1, with condition DOWNLINK

Table A.3.8.4-3: Transmission End Response (Step 3a1, Table A.3.8.3-1)

Derivation Path: Table A.3.8.4-2, with condition ACK

Table A.3.8.4-4: Transmission End Notify (Step 3b2, Table A.3.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.15-1				
Information Element	Value/remark	Comment	Reference	Condition
User Id of the Transmitting User		Carries the identity of the user whose media transmission has been released	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.6	
User Id of the Transmitting User	px_MCVideo_ID_User_A			
Audio SSRC of the Transmitting User	Media/Audio SSRC of remote client (Client A)	SSRC of the user transmitting the media	ETSI TS 124 581 [9] (3GPP TS 24.581) clause 9.2.3.16	

Table A.3.8.4-5: Transmission End Notify (Step 3a3, Table A.3.8.3-1)

Derivation Path: Table A.3.8.4-4, with condition ACK

Table A.3.8.4-6: Transmission Idle (Steps 4 and 5, Table A.3.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.16-1

Table A.3.8.4-7: Transmission Control Ack (Steps 3a2, 3a4 and 3aA2, Table A.3.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table A.3.8.4-8: Transmission Control Ack (Steps 2, 3aA4 and 3bA3, Table A.3.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition DOWNLINK

Table A.3.8.4-9: Media Reception End Response (Steps 3aA3 and 3bA2, Table A.3.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.4-1, with conditions ACK and UPLINK

Table A.3.8.4-10: Media Reception End Request (Step 3bA1, Table A.3.8.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.3-1, with condition DOWNLINK

Table A.3.8.4-11: Media Reception End Request (Step 3aA1, Table A.3.8.3-1)

Derivation Path: Table A.3.8.4-10, with condition ACK

A.3.9 MCVideo Media Reception Request and Response

A.3.9.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.9.2 Definition of system information messages

N/A

A.3.9.3 Procedure

Table A.3.9.3-1: MCVideo Media Reception Request and Response

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCVideo Client) sends a Receive Media Request, with acknowledgement	-->	Receive Media Request	-	-
2	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
-	EXCEPTION: Steps 3a1-3b1 describe behaviour that depends on the MCVideo Server implementation; the "lower case letter" identifies a step sequence that takes place if the MCVideo Server requests or not acknowledgement of sent transmission control messages.	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Receive Media Response message to the SS-UE, with acknowledgement?	<--	Receive Media Response	-	P
3a2	The SS-UE (MCVideo Client) sends a Transmission Control Ack message in response to the Receive Media Response message.	-->	Transmission Control Ack	-	-
3b1	Check: Does the IUT (MCVideo Server) send a Receive Media Response message to the SS-UE, with no acknowledgement?	<--	Receive Media Response	-	P

NOTE: The SS-UE being used is specified in the test case calling the procedure.

A.3.9.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.3.9.4-1: Receive Media Request (Step 1, Table A.3.9.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.1.4-1, with condition ACK

Table A.3.9.4-2: Receive Media Response (Step 3b1, Table A.3.9.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.8-1

Table A.3.9.4-3: Receive Media Response (Step 3a1, Table A.3.9.3-1)

Derivation Path: Table A.3.9.4-2, with condition ACK

Table A.3.9.4-4: Transmission Control Ack (Step 3a2, Table A.3.9.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table A.3.9.4-5: Transmission Control Ack (Steps 2, Table A.3.9.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition DOWNLINK

A.3.10 MCVideo Media Reception End Request and Response

A.3.10.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.10.2 Definition of system information messages

N/A

A.3.10.3 Procedure

Table A.3.10.3-1: MCVideo Media Reception Request and Response

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCVideo Client) sends a Media Reception End Request, with acknowledgement	-->	Media Reception End Request	-	-
2	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
-	EXCEPTION: Steps 3a1-3b1 describe behaviour that depends on the MCVideo Server implementation; the "lower case letter" identifies a step sequence that takes place if the MCVideo Server requests or not acknowledgement of sent transmission control messages.	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Media Reception End Response message to the SS-UE, with acknowledgement?	<--	Media Reception End Response	-	P
3a2	The SS-UE (MCVideo Client) sends a Transmission Control Ack message in response to the Media Reception End Response message.	-->	Transmission Control Ack	-	-
3b1	Check: Does the IUT (MCVideo Server) send a Media Reception End Response message to the SS-UE, with no acknowledgement?	<--	Media Reception End Response	-	P

NOTE: The SS-UE being used is specified in the test case calling the procedure.

A.3.10.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.3.10.4-1: Media Reception End Request (Step 1, Table A.3.10.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.3-1, with conditions ACK and UPLINK

Table A.3.10.4-2: Media Reception End Response (Step 3b1, Table A.3.10.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.4-1, with condition DOWNLINK

Table A.3.10.4-3: Media Reception End Response (Step 3a1, Table A.3.10.3-1)

Derivation Path: Table A.3.10.4-2, with condition ACK

Table A.3.10.4-4: Transmission Control Ack (Step 3a2, Table A.3.10.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table A.3.10.4-5: Transmission Control Ack (Steps 2, Table A.3.10.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition DOWNLINK

A.3.11 MCVideo Transmission Request - Transmission Rejected

A.3.11.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.11.2 Definition of system information messages

N/A

A.3.11.3 Procedure

Table A.3.11.3-1: MCVideo Transmission Request - Transmission Rejected

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCVideo Client) sends a Transmission Request message, with acknowledgement. (Note)	-->	Transmission Request	-	-
2	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
-	EXCEPTION: Steps 3a1-3b1 describe behaviour that depends on the MCVideo Server implementation; the "lower case letter" identifies a step sequence that takes place if the MCVideo Server requests or not acknowledgement of sent transmission control messages.	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Transmission Rejected message to the SS-UE, with acknowledgement?	<--	Transmission Rejected	-	P
3a2	The SS-UE (MCVideo Client) sends a Transmission Control Ack message in response to the Transmission Rejected message.	-->	Transmission Control Ack	-	-
3b1	Check: Does the IUT (MCVideo Server) send a Transmission Rejected message to the SS-UE, with no acknowledgement?	<--	Transmission Rejected	-	P
NOTE: The SS-UE being used is specified in the test case calling the procedure. If not stated, SS-UE1 (MCVideo Client) will be assumed.					

A.3.11.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.3.11.4-1: Transmission Request (Step 1, Table A.3.11.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.1.1-1, with condition ACK

Table A.3.11.4-2: Transmission Rejected (Step 3b1, Table A.3.11.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.2-1

Table A.3.11.4-3: Transmission Rejected (Step 3a1, Table A.3.11.3-1)

Derivation Path: Table A.3.7.4-2, with condition ACK

Table A.3.11.4-4: Transmission Control Ack (Step 3a2, Table A.3.11.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table A.3.11.4-5: Transmission Control Ack (Steps 2, Table A.3.11.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition DOWNLINK

A.3.12 MCVideo Transmission Request - Queue Position Info

A.3.12.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.12.2 Definition of system information messages

N/A

A.3.12.3 Procedure

Table A.3.12.3-1: MCVideo Transmission Request - Queue Position Info

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCVideo Client) sends a Transmission Request message, with acknowledgement. (Note)	-->	Transmission Request	-	-
2	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
-	EXCEPTION: Steps 3a1-3b1 describe behaviour that depends on the MCVideo Server implementation; the "lower case letter" identifies a step sequence that takes place if the MCVideo Server requests or not acknowledgement of sent transmission control messages.	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Queue Position Info message to the SS-UE, with acknowledgement?	<--	Queue Position Info	-	P
3a2	The SS-UE (MCVideo Client) sends a Transmission Control Ack message in response to the Queue Position Info message.	-->	Transmission Control Ack	-	-
3b1	Check: Does the IUT (MCVideo Server) send a Queue Position Info message to the SS-UE, with no acknowledgement?	<--	Queue Position Info	-	P
NOTE: The SS-UE being used is specified in the test case calling the procedure. If not stated, SS-UE1 (MCVideo Client) will be assumed.					

A.3.12.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.3.12.4-1: Transmission Request (Step 1, Table A.3.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.1.1-1, with condition ACK

Table A.3.12.4-2: Queue Position Info (Step 3b1, Table A.3.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.6-1

Table A.3.12.4-3: Queue Position Info (Step 3a1, Table A.3.12.3-1)

Derivation Path: Table A.3.7.4-2, with condition ACK

Table A.3.12.4-4: Transmission Control Ack (Step 3a2, Table A.3.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table A.3.12.4-5: Transmission Control Ack (Steps 2, Table A.3.12.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition DOWNLINK

A.3.13 MCVideo Queue Position Request - Queue Position Info

A.3.13.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.13.2 Definition of system information messages

N/A

A.3.13.3 Procedure

Table A.3.13.3-1: MCVideo Queue Position Request - Queue Position Info

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS-UE (MCVideo Client) sends a Queue Position Request message, with acknowledgement. (Note)	-->	Queue Position Request	-	-
2	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
-	EXCEPTION: Steps 3a1-3b1 describe behaviour that depends on the MCVideo Server implementation; the "lower case letter" identifies a step sequence that takes place if the MCVideo Server requests or not acknowledgement of sent transmission control messages.	-	-	-	-
3a1	Check: Does the IUT (MCVideo Server) send a Queue Position Info message to the SS-UE, with acknowledgement?	<--	Queue Position Info	-	P
3a2	The SS-UE (MCVideo Client) sends a Transmission Control Ack message in response to the Queue Position Info message.	-->	Transmission Control Ack	-	-
3b1	Check: Does the IUT (MCVideo Server) send a Queue Position Info message to the SS-UE, with no acknowledgement?	<--	Queue Position Info	-	P
NOTE: The SS-UE being used is specified in the test case calling the procedure. If not stated, SS-UE1 (MCVideo Client) will be assumed.					

A.3.13.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.3.13.4-1: Queue Position Request (Step 1, Table A.3.13.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.1.3-1, with condition ACK

Table A.3.13.4-2: Queue Position Info (Step 3b1, Table A.3.13.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.6-1

Table A.3.13.4-3: Queue Position Info (Step 3a1, Table A.3.13.3-1)

Derivation Path: Table A.3.7.4-2, with condition ACK

Table A.3.13.4-4: Transmission Control Ack (Step 3a2, Table A.3.13.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table A.3.13.4-5: Transmission Control Ack (Steps 2, Table A.3.13.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition DOWNLINK

A.3.14 MCVideo Transmission Revoked - Transmission End Request

A.3.14.1 Initial conditions

As specified in the test case which calls the procedure in its entirety or refers to parts of it.

A.3.14.2 Definition of system information messages

N/A

A.3.14.3 Procedure

Table A.3.14.3-1: MCVideo Transmission Revoked - Transmission End Request

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Steps 1aA-3bB describe behaviour that depends on the MCVideo Server implementation; the "uppercase case letter" identifies a step sequence that takes place if the MCVideo Server requests or not acknowledgement of sent transmission control messages; the "lower case letter" identifies a step sequence that takes place if the MCVideo Server uses Transmission Revoked or Transmission End Request message to revoke the transmission control grant.	-	-	-	-
1aA	Check: Does the IUT (MCVideo Server) send a Transmission Revoked message to the SS-UE, with acknowledgement?	<--	Transmission Revoked	-	P
2aA	The SS-UE (MCVideo Client) sends a Transmission Control Ack message in response to the Transmission Revoked message.	-->	Transmission Control Ack	-	-
3aA	The SS-UE (MCVideo Client) sends a Transmission End Request message, with acknowledgement. (Note)	-->	Transmission End Request	-	-
4aA	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
5aA	Check: Does the IUT (MCVideo Server) send a Transmission End Response message to SS-UE with acknowledgement? (Note)	<--	Transmission End Response	-	P
6aA	The SS-UE (MCVideo Client) sends a Transmission Control Ack message in response	-->	Transmission Control Ack	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	to the Transmission End Response message. (Note)				
1bA	Check: Does the IUT (MCVideo Server) send a Transmission End Request message to SS-UE with acknowledgement? (Note)	<--	Transmission End Request	-	P
2bA	The SS-UE (MCVideo Client) sends a Transmission Control Ack message in response to the Transmission End Request message. (Note)	-->	Transmission Control Ack	-	-
3bA	The SS-UE (MCVideo Client) sends a Transmission End Response message, with acknowledgement. (Note)	-->	Transmission End Response	-	-
4bA	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
1aB	Check: Does the IUT (MCVideo Server) send a Transmission Revoked message to the SS-UE, with no acknowledgement?	<--	Transmission Revoked	-	P
2aB	The SS-UE (MCVideo Client) sends a Transmission End Request message, with acknowledgement. (Note)	-->	Transmission End Request	-	-
3aB	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
4aB	Check: Does the IUT (MCVideo Server) send a Transmission End Response message to SS-UE with no acknowledgement? (Note)	<--	Transmission End Response	-	P
1bB	Check: Does the IUT (MCVideo Server) send a Transmission End Request message to SS-UE with no acknowledgement? (Note)	<--	Transmission End Request	-	P
2bB	The SS-UE (MCVideo Client) sends a Transmission End Response message, with acknowledgement. (Note)	-->	Transmission End Response	-	-
3bB	Check: Does the IUT (MCVideo Server) send a Transmission Control Ack message?	<--	Transmission Control Ack	-	P
NOTE: The SS-UE being used is specified in the test case calling the procedure. If not stated, SS-UE1 (MCVideo Client) will be assumed.					

A.3.14.4 Specific message contents

All message contents are as specified in ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), clause 5.5 and in the test case calling the procedure, with the following clarifications:

- Subclauses referring to messages from SS relate to the IUT (MCX Server).
- Subclauses referring to messages from UE relate to either SS-UE1 (MCX Client) or SS-UE2 (MCX Client).

Table A.3.14.4-1: Transmission Revoked (Step 1aB, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.2.2-1

Table A.3.14.4-2: Transmission Revoked (Step 1aA, Table A.3.14.3-1)

Derivation Path: Table A.3.14.4-1, with condition ACK

Table A.3.14.4-3: Transmission End Request (Steps 3aA and 2aB, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.1-1, with conditions ACK and UPLINK

Table A.3.14.4-4: Transmission End Response (Step 4aB, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.2-1, with condition DOWNLINK

Table A.3.14.4-5: Transmission End Response (Step 5aA, Table A.3.14.3-1)

Derivation Path: Table A.3.14.4-4, with condition ACK

Table A.3.14.4-6: Transmission End Request (Step 1bB, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.1-1, with condition DOWNLINK

Table A.3.14.4-7: Transmission End Request (Step 1bA, Table A.3.14.3-1)

Derivation Path: Table A.3.14.4-6, with condition ACK

Table A.3.14.4-8: Transmission End Response (Steps 3bA and 2bB, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.2-1, with conditions ACK and UPLINK

Table A.3.14.4-9: Transmission Control Ack (Steps 2aA, 6aA and 2bA, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition UPLINK

Table A.3.14.4-10: Transmission Control Ack (Steps 4aA, 4bA, 3aB and 3bB, Table A.3.14.3-1)

Derivation Path: ETSI TS 136 579-1 [1] (3GPP TS 36.579-1), Table 5.5.11.3.5-1, condition DOWNLINK

Annex B (informative): Bibliography

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History

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