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TECHNICAL SPECIFICATION

**LTE;
Mission Critical (MC) services over LTE;
Part 6: Mission Critical Video (MCVideo) User Equipment (UE)
Protocol conformance specification
(3GPP TS 36.579-6 version 14.2.0 Release 14)**



Reference

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Modal verbs terminology

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Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	6
Introduction	7
1 Scope	8
2 References	8
3 Definitions of terms, symbols and abbreviations	10
3.1 Terms.....	10
3.2 Symbols.....	10
3.3 Abbreviations	10
4 General	11
4.1 Test methodology.....	11
4.1.1 Testing of optional functions and procedures	11
4.1.2 Test interfaces and facilities.....	11
4.2 Implicit testing.....	12
4.3 Repetition of tests.....	12
4.4 Handling of differences between conformance requirements in different releases of cores specifications.....	12
4.5 Reference conditions	12
4.6 Generic setup procedures	12
5 MCVideo Client Configuration.....	12
5.1 Configuration / Authentication / User Authorization / UE Configuration / User Profile / Key Generation.....	12
5.1.1 Test Purpose (TP)	12
5.1.2 Conformance requirements	13
5.1.3 Test description.....	27
5.1.3.1 Pre-test conditions.....	27
5.1.3.2 Test procedure sequence	28
5.1.3.3 Specific message contents.....	29
5.2 Configuration / Group Creation / Group ReGroup Creation / Group ReGroup Teardown	29
5.2.1 Test Purpose (TP)	29
5.2.2 Conformance requirements	30
5.2.3 Test description.....	31
5.2.3.1 Pre-test conditions.....	31
5.2.3.2 Test procedure sequence	32
5.2.3.3 Specific message contents.....	34
5.3 Configuration / Group Affiliation / Remote change / De-affiliation / Home MCVideo system	37
5.3.1 Test Purpose (TP)	37
5.3.2 Conformance requirements	39
5.3.3 Test description.....	41
5.3.3.1 Pre-test conditions.....	41
5.3.3.2 Test procedure sequence	43
5.3.3.3 Specific message contents.....	47
5.4 Configuration / Determination of MCVideo Service Settings / Current Active MCVideo Settings / De-subscribe.....	57
5.4.1 Test Purpose (TP)	57
5.4.2 Conformance requirements	58
5.4.3 Test description.....	59
5.4.3.1 Pre-test conditions.....	59
5.4.3.2 Test procedure sequence	60
5.4.3.3 Specific message contents.....	62
6 On-Network Test Scenarios	64
6.1 Group Calls	64

6.1.1	Pre-Arranged Group Call.....	64
6.1.1.1	On-network / On-demand Pre-arranged Group Call / Automatic Commencement Mode / Transmission Control / Upgrade to Emergency Group Call / Cancel Emergency State / Upgrade to Imminent Peril Group Call / Cancel Imminent Peril State / Client Originated (CO).....	64
6.1.1.2	On-network / On-demand Pre-arranged Group Call / Automatic Commencement Mode / Reception Control / Upgrade to Emergency Group Call / Cancel Emergency State / Upgrade to Imminent Peril Group Call / Cancel Imminent Peril State / Client Terminated (CT)	87
6.1.1.3	On-network / On-demand Pre-arranged Group Call / Manual Commencement Mode / Client Originated (CO)	100
6.1.1.4	On-network / On-demand Pre-arranged Group Call / Manual Commencement Mode / Client Terminated (CT)	107
6.1.1.5	On-network / On-demand Pre-arranged Group Call / Emergency Group Call / Client Originated (CO)	113
6.1.1.6	On-network / On-demand Pre-arranged Group Call / Emergency Group Call / Client Terminated (CT).....	122
6.1.1.7	On-network / On-demand Pre-arranged Group Call / Broadcast Group Call / Client Originated (CO)	129
6.1.1.8	On-network / On-demand Pre-arranged Group Call / Broadcast Group Call / Client Terminated (CT).....	135
6.1.1.9	On-network / On-demand Pre-arranged Group Call / Broadcast Group Call with Temporary Group / Client Originated (CO)	143
6.1.1.10	On-network / On-demand Pre-arranged Group Call / Imminent Peril Group Call / Client Originated (CO)	148
6.1.1.11	On-network / On-demand Pre-arranged Group Call / Imminent Peril Group Call / Client Terminated (CT)	155
6.1.2	Chat Group Call.....	162
6.1.2.1	On-network / Chat Group Call / Join Chat Group Session / End Chat Group Call / Client Originated (CO)	162
6.1.2.1.1	Test Purpose (TP).....	162
6.1.2.1.3	Test description	166
6.1.2.2	On-network / Chat Group Call / Upgrade to Emergency Chat Group Call / Cancel Emergency Chat Group Call / Upgrade to Imminent Peril Chat Group Call / Cancel Imminent Peril Chat Group Call / Client Origination (CO)	169
6.1.2.2.1	Test Purpose (TP).....	169
6.1.2.2.2	Conformance Requirements	170
6.1.2.2.3	Test description	177
6.1.2.3	On-network / Chat Group Call / Upgrade to Emergency Chat Group Call / Cancel Emergency Chat Group Call / Upgrade to Imminent Peril Chat Group Call / Cancel Imminent Peril Chat Group Call / Client Terminated (CT).....	185
6.1.2.3.1	Test Purpose (TP).....	185
6.1.2.3.2	Conformance requirements.....	186
6.1.2.3.3	Test description	204
6.1.2.4	On-network / Chat Group Call / Emergency Call / Imminent Peril Call / Client Terminated (CT)....	211
6.1.2.4.1	Test Purpose (TP).....	212
6.1.2.4.2	Conformance requirements.....	212
6.1.2.4.3	Test description	214
6.2	Private Calls	218
6.2.1	On-network / Private Call / On-demand / Automatic Commencement Mode / With Transmission Control / Upgrade to Emergency Call / Cancellation of Emergency on User Request / Client Originated (CO)	218
6.2.1.1	Test Purpose (TP).....	218
6.2.1.3	Test description	223
6.2.1.3.1	Pre-test conditions	223
6.2.1.3.3	Specific message contents	226
6.2.2	On-network / Private Call / On-demand / Automatic Commencement Mode / With Transmission Control / Upgrade to Emergency Call / Cancellation of Emergency on User request / Client Terminated (CT).....	229
6.2.2.1	Test Purpose (TP).....	229
6.2.2.2	Conformance requirements	230
6.2.2.3	Test description	235
6.2.2.3.1	Pre-test conditions	235
6.2.2.3.2	Test procedure sequence.....	236

6.2.2.3.3	Specific message contents	238
6.2.3	On-network / Private Call / On-demand / Automatic Commencement Mode / Without Transmission Control / Client Originated (CO)	239
6.2.3.1	Test Purpose (TP).....	239
6.2.3.2	Conformance requirements	240
6.4.3.3	Test description	242
6.4.3.3.1	Pre-test conditions	242
6.2.3.3.2	Test procedure sequence.....	242
6.2.3.3.3	Specific message contents	243
6.2.4	On-network / Private Call / On-demand / Automatic Commencement Mode / Without Transmission Control / Client Terminated (CT)	244
6.2.4.1	Test Purpose (TP).....	244
6.2.4.2	Conformance requirements	244
6.2.4.3	Test description	246
6.2.4.3.1	Pre-test conditions	246
6.2.4.3.2	Test procedure sequence.....	247
6.2.4.3.3	Specific message contents	248
6.2.5	On-network / Private Call / Emergency Private Call / On-demand / Automatic Commencement Mode / Force of Automatic Commencement Mode / Without Transmission Control / Client Originated (CO)	248
6.2.5.1	Test Purpose (TP).....	248
6.2.5.2	Conformance requirements	249
6.2.5.3	Test description	252
6.2.5.3.1	Pre-test conditions	252
6.2.5.3.2	Test procedure sequence.....	253
6.2.5.3.3	Specific message contents	254
6.2.6	On-network / Private Call / Emergency Private Call / On-demand / Manual Commencement Mode / Force of automatic commencement mode / Without Transmission Control / Client Terminated (CT)....	255
6.2.6.1	Test Purpose (TP).....	255
6.2.6.2	Conformance requirements	255
6.2.6.3	Test description	259
6.2.6.3.1	Pre-test conditions	259
6.2.6.3.2	Test procedure sequence.....	259
6.2.6.3.3	Specific message contents	260
6.2.7	On-network / Private Call / On-demand / Manual Commencement Mode / Without Transmission Control / Client Originated (CO)	261
6.2.7.1	Test Purpose (TP).....	261
6.2.7.2	Conformance requirements	261
6.2.7.3	Test description	267
6.2.7.3.1	Pre-test conditions	267
6.2.7.3.2	Test procedure sequence.....	268
6.2.7.3.3	Specific message contents	269
6.2.8	On-network / Private Call / On-demand / Manual Commencement Mode / Without Transmission Control / Client Terminated (CT)	269
6.2.8.1	Test Purpose (TP).....	269
6.2.8.2	Conformance requirements	270
6.2.8.3	Test description	276
6.2.8.3.1	Pre-test conditions	276
6.2.8.3.2	Test procedure sequence.....	277
6.2.8.3.3	Specific message contents	278
6.3	Emergency Alert	279
7	Off-Network Test Scenarios.....	279
Annex A (informative):	Change history	280
History		281

Foreword

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

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

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- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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

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

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

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

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

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

- can** indicates that something is possible
- cannot** indicates that something is impossible

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

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

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

In addition:

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

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

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

Introduction

The present document is part 6 of a multi-part deliverable covering conformance test specification for Mission Critical Services over LTE consisting of:

3GPP TS 36.579-1 [2]: "Mission Critical (MC) services over LTE protocol conformance testing; Part 1: Common test environment";

3GPP TS 36.579-2 [24]: "Mission Critical (MC) services over LTE; Part 2: Mission Critical Push To Talk (MCPTT) User Equipment (UE) Protocol conformance specification";

3GPP TS 36.579-3 [3]: "Mission Critical (MC) services over LTE; Part 3: Mission Critical Push To Talk (MCPTT) Server Application test specification";

3GPP TS 36.579-4 [4]: "Mission Critical (MC) services over LTE; Part 4: Test Applicability and Implementation Conformance Statement (ICS)";

3GPP TS 36.579-5 [5]: "Mission Critical (MC) services over LTE; Part 5: Abstract test suite (ATS)";

3GPP TS 36.579-6: "Mission Critical (MC) services over LTE; Part 6: Mission Critical Video (MCVideo) User Equipment (UE) Protocol conformance specification" (the present document);

3GPP TS 36.579-7 [25]: "Mission Critical (MC) services over LTE; Part 7: Mission Critical Data (MCData) User Equipment (UE) Protocol conformance specification".

1 Scope

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

In particular the present document contains:

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

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

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

- default setting of the test parameters TS 36.579-1 [2];
- Implementation Conformance Statement (ICS) TS 36.579-4 [4] and Implementation eXtra Information for Testing (IXIT) TS 36.579-5 [5];
- the applicability of each test case TS 36.579-4 [4].

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

2 References

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

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

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 36.579-1: "Mission Critical (MC) services over LTE; Part 1: Common test environment".
- [3] Void
- [4] 3GPP TS 36.579-4: " Mission Critical (MC) services over LTE; Part 4: Test Applicability and Implementation Conformance Statement (ICS).
- [5] 3GPP TS 36.579-5: "Mission Critical (MC) services over LTE; Part 5: Abstract test suite (ATS)".

- [6] 3GPP TS 36.523-1: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification".
- [7] Void
- [8] Void
- [9] 3GPP TS 24.379: "Mission Critical Push To Talk (MCPTT) call control; Protocol specification".
- [10] 3GPP TS 24.380: "Mission Critical Push To Talk (MCPTT) media plane control; Protocol specification".
- [11] 3GPP TS 24.481: "Mission Critical Services (MCS) group management; Protocol specification".
- [12] 3GPP TS 24.482: "Mission Critical Services (MCS) identity management; Protocol specification".
- [13] 3GPP TS 24.483: "Mission Critical Services (MCS) Management Object (MO)".
- [14] 3GPP TS 24.484: "Mission Critical Services (MCS) configuration management; Protocol specification".
- [15] 3GPP TS 33.179: " Security of Mission Critical Push To Talk (MCPTT) over LTE".
- [16] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".
- [17] Void
- [18] Void.
- [19] 3GPP TS 36.509: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Special conformance testing functions for User Equipment (UE)".
- [20] 3GPP TS 36.508: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRAN); Common Test Environments for User Equipment (UE) Conformance Testing".
- [21] OpenID Connect 1.0: "OpenID Connect Core 1.0 incorporating errata set 1", http://openid.net/specs/openid-connect-core-1_0.html.
- [22] 3GPP TS 33.310: "Network Domain Security (NDS); Authentication Framework (AF)".
- [23] Void
- [24] 3GPP TS 36.579-2: "Mission Critical (MC) services over LTE; Part 2: Mission Critical Push To Talk (MCPTT) User Equipment (UE) Protocol conformance specification".
- [25] 3GPP TS 36.579-7: "Mission Critical (MC) services over LTE; Part 7: Mission Critical Data (MCData) User Equipment (UE) Protocol conformance specification".
- [26] 3GPP TS 24.281: Mission Critical Video (MCVideo) signalling control; Protocol specification".
- [27] 3GPP TS 24.581: "Mission Critical Video (MCVideo) media plane control; Protocol specification".
- [28] 3GPP TS 23.281: "Functional architecture and information flows to support Mission Critical Video (MCVideo); Stage 2".
- [29] 3GPP TS 22.281: "Mission Critical Video over LTE".
- [30] 3GPP TS 33.180: "Security of the mission critical service".

3 Definitions of terms, symbols and abbreviations

3.1 Terms

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

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

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

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

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

3.2 Symbols

For the purposes of the present document, the following symbols apply:

None.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

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

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

4 General

4.1 Test methodology

4.1.1 Testing of optional functions and procedures

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

A declaration by the MCVideo Client supplier (to use the Implementation Conformance Statement (ICS) proforma specified in TS 36.579-4 [4]) is used to determine whether an optional function/procedure has been implemented.

4.1.2 Test interfaces and facilities

Detailed descriptions of the MCVideo

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

4.2 Implicit testing

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

4.3 Repetition of tests

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

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

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

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

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

When there is no Release indicated for a conformance requirement text, this should be understood either as the Conformance requirements in the latest version of the spec with release = the TC Applicability release (which can be found in TS 36.579-4 [4], Table 4-1: Applicability of tests and additional information for testing, column 'Release'), or, as the Conformance requirements in the latest version of the spec of the release when the feature was introduced to the core specs.

4.5 Reference conditions

The reference environments used by all signalling and protocol tests is specified in TS 36.579-1 [2]. Where a test requires an environment that is different, this will be specified in the test itself.

4.6 Generic setup procedures

A set of basic generic procedures for MCVideo Client-Server communication are described in TS 36.579-1 [2]. These procedures will be used in numerous test cases throughout the present document.

5 MCVideo Client Configuration

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

5.1.1 Test Purpose (TP)

(1)

```
with { UE (MCVIDEO Client) attached to EPS services }
ensure that {
  when { the MCVideo User activates an MCVideo application and requests MCVideo initialisation }
```

```

    then { UE (MCVIDEO Client) performs MCVideo User Authentication }
  }

```

(2)

```

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

```

(3)

```

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

```

(4)

```

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

```

(5)

```

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

```

(6)

```

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

```

5.1.2 Conformance requirements

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

[TS 24.482, clause 6.2.1]

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[TS 24.482, Annex A.2.1.2]

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

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

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

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

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

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

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

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

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

[TS 33.180, Annex D.1]

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

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

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

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

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

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

[TS 33.180, clause 5.1.3.1]

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

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

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

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

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

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

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

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

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

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

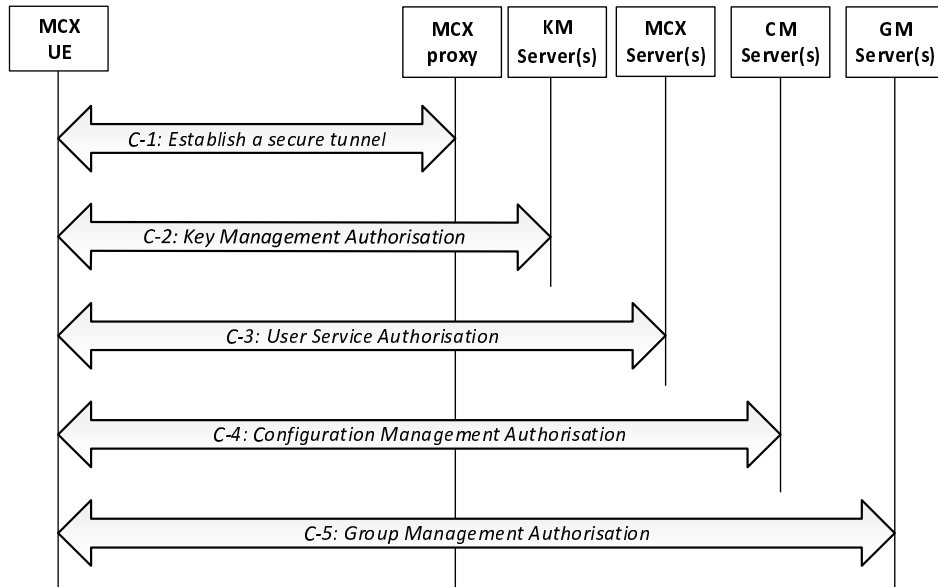


Figure 5.1.3.1-1: MCX user service authorization

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

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

[TS 33.180, clause 5.3.3]

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

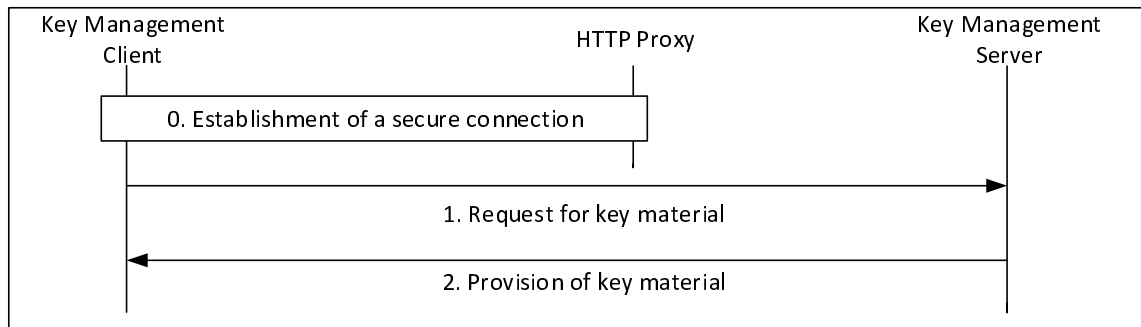


Figure 5.3.3-1: Provisioning of key material via the HTTP proxy

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

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

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

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

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

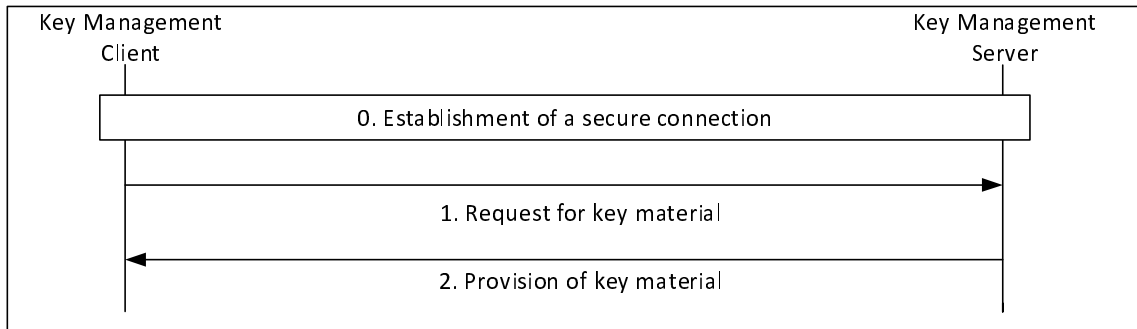


Figure 5.3.3-2: Provisioning of key material without a proxy

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

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

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

[TS 24.484, clause 4.2.1]

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

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

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

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

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

[TS 24.484, clause 4.2.2.1]

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

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

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

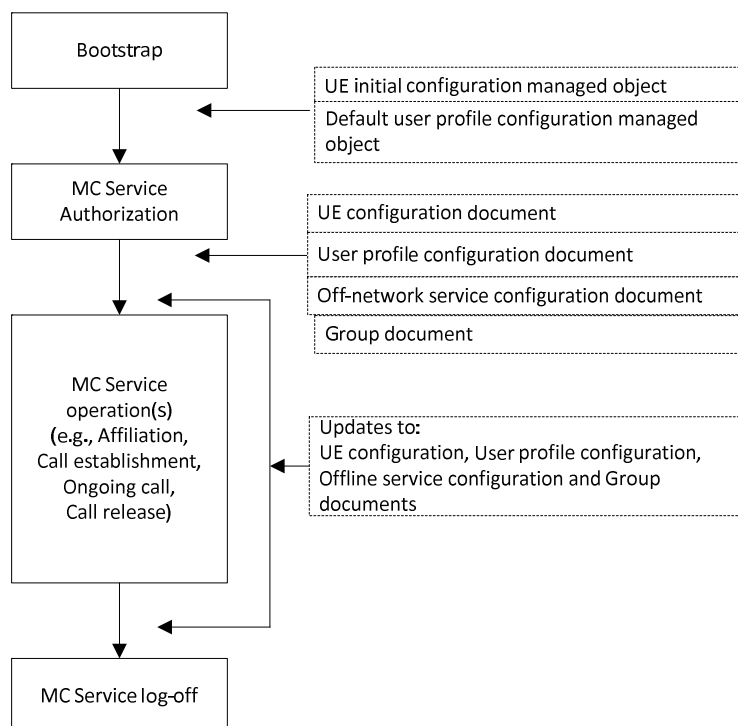


Figure 4.2.2-1 MC UE online configuration time sequence

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

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

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

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

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

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

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

[TS 24.484, clause 6.2.2]

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

[TS 24.484, clause 6.3.1.1]

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

[TS 24.484, clause 6.3.3.2.1]

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

[TS 24.484, clause 6.3.3.2.2]

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

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

[TS 24.484, clause 6.3.13.2.1]

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

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

[TS 24.484, clause 6.3.13.2.2]

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

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

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

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

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

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

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

[TS 24.481, clauses 6.2.2.2]

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

[TS 24.481, clauses 6.2.3]

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

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

[TS 24.481, clauses 6.3.3.2.1]

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

[TS 24.481, clauses 6.3.3.2.2]

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

[TS 24.481, clauses 6.3.13.2.1]

In order to subscribe to notification of changes of:

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

...

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

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

...

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

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

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

[TS 24.281, clause 7.2.1]

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

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

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

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

If the MCVideo client, upon performing SIP registration:

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

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

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

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

If the MCVideo client, upon performing SIP registration:

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

then the MCVideo client:

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

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

[TS 24.281, clause 7.2.1A]

This procedure is only referenced from other procedures.

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

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

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

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

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

[TS 24.281, clause 7.2.2]

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

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

then the MCVideo client:

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

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

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

[TS 24.281, clause 7.2.3]

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

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

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

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

[TS 33.180, clause 6.1.2]

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

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

5.1.3 Test description

5.1.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server).
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [20] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10, is inserted.
- The MCVideo Client has been provisioned with the Initial UE Configuration Data as specified in TS 36.579-1 [2], clause 5.5.8.1 allowing for the location of the configuration management server for configuration of the MCVideo UE initial configuration management object (MO) and the default MCVideo user profile configuration management object (MO).
- A single APN (px_MCVideo_ALL_APN, TS 36.579-5 [5]) shall be provided in the Initial UE Configuration Data which the UE shall use to access each and all MCVideo relevant services including the MCVideo SIP-1 reference point, the MC common core services for the HTTP-1 reference point and the MC identity management service for the CSC-1 reference point.
- According to TS 33.180 [30] all HTTP connections are secured by TLS. The HTTP-1 interface authentication between the HTTP client in the MC UE and the HTTP server endpoint (HTTP proxy, IdM server or KMS) shall be performed by one-way authentication of the HTTP server endpoint based on server certificate as described in TS 33.180 [30] clause 6.1.1.
- The UE User is provided with username/password for user authentication (px_MCVideo_User_A_username, px_MCVideo_User_A_password as provided in TS 36.579-5 [5], Table 9.2-1: MCVideo Client Common PIXIT)

Preamble:

- The MCVideo client is attached to EPS services and then the UE is Switched OFF (state 1) according to TS 36.508 [20].

5.1.3.2 Test procedure sequence

Table 5.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The UE is switched-on.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC related actions which step 1 above will trigger are described in TS 36.579-1 [2], subclause 5.4.2A 'Generic Test Procedure for MCVideo UE registration'. The test sequence below shows only the MCVideo relevant messages being exchanged.	-	-	-	-
2	Make the MCVIDEO User request MCVideo service authorisation/configuration. NOTE: This is expected to be done via a suitable implementation dependent mechanism and may be manually or automatically initiated.	-	-	-	-
3-12	Check: Does the UE (MCVIDEO Client) perform the generic procedure for MCVIDEO user authentication specified in described in TS 36.579-1 [2] Table 5.3.2.3-1, steps 1 through 10? NOTE: The term "MCPTT" in TS 36.579-1 [2] Table 5.3.2.3-1 is replaced with "MCVIDEO".	-	-	1	P
13-16	Check: Does the UE (MCVIDEO Client) perform the generic procedure for MCVIDEO key management authorization and obtain identity management key material as specified in described in TS 36.579-1 [2] Table 5.3.2.3-1, steps 11 through 14? NOTE: The term "MCPTT" in TS 36.579-1 [2] Table 5.3.2.3-1 is replaced with "MCVIDEO".	-	-	2	P
-	EXCEPTION: In parallel to the events described in all steps below, the steps in Table 5.1.3.2-2 and Table 5.1.3.2-3 should take place.	-	-	-	-
-	EXCEPTION: Steps 17a1-17b2 describe behaviour that depends on UE implementation; the "lower case letter" identifies a step sequence that take place when one or the other is the case.	-	-	-	-
17a1	Check: Does the UE (MCVIDEO Client) send a SIP REGISTER request for service authorisation?	-->	SIP REGISTER	3	P
17a2	The SS (MCVIDEO Server) sends SIP 200 (OK). NOTE: The user is now authorized for MCVIDEO service.	<--	SIP 200 (OK)	-	-
17a3	Check: Does the UE (MCVIDEO Client) send a SIP PUBLISH request for update of PoC-settings? NOTE: See NOTE 1 of TS 36.579-1 [2] Table 5.3.2.3-2.	-->	SIP PUBLISH	6	P
17a4	The SS (MCVIDEO Server) sends SIP 200 (OK).	<--	SIP 200 (OK)	-	-
17b1	Check: Does the UE (MCVIDEO Client) send a SIP PUBLISH request for service authorisation and update of PoC-settings? NOTE: See NOTE 1 of TS 36.579-1 [2] Table 5.3.2.3-2.	-->	SIP PUBLISH	3, 6	P
17b2	The SS (MCVIDEO Server) sends SIP 200 (OK).	<--	SIP 200 (OK)	-	-
-	EXCEPTION: SS (MCVIDEO Server) releases the E-UTRA connection.	-	-	-	-

Table 5.1.3.2-2: Parallel Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVIDEO Client) perform the configuration management subscription and notification procedure as described in TS 36.579-1 [2] Table 5.3.2.3-2A? NOTE: The term "MCPTT" in TS 36.579-1 [2] Table 5.3.2.3-2A is replaced with "MCVIDEO".	-	-	4	P

Table 5.1.3.2-3: Parallel Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE (MCVIDEO Client) perform the group document subscription and notification procedure as described in TS 36.579-1 [2] Table 5.3.2.3-2B? NOTE: The term "MCPTT" in TS 36.579-1 [2] Table 5.3.2.3-2B is replaced with "MCVIDEO".	-	-	5	P

5.1.3.3 Specific message contents

Table 5.1.3.3-1: SIP REGISTER (Step 17a1, Table 5.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.3.2.4-12, condition MCVIDEO

Table 5.1.3.3-2: SIP PUBLISH (Step 17a3, Table 5.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.3.2.4-13A, condition MCVIDEO

Table 5.1.3.3-3: SIP PUBLISH (Step 17b1, Table 5.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.3.2.4-13, condition MCVIDEO

Table 5.1.3.3-4: SIP 200 (OK) (Step 17a2, 17a4, 17b2, Table 5.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.3.2.4-26, condition MCVIDEO

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

5.2.1 Test Purpose (TP)

(1)

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

(2)

```

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

```

(3)

```

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

```

5.2.2 Conformance requirements

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

[TS 24.481, clause 6.3.2.2.1]

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

[TS 24.481, clause 6.3.2.2.2]

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

[TS 24.481, clause 6.3.14.1]

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

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

[TS 24.481, clause 6.3.14.2]

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

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

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

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

[TS 24.481, clause 6.3.15.1]

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

[TS 24.481, clause 6.3.15.2]

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

[TS 33.180, clause 7.3.2]

The group creation procedure is described in clause 10.2.3 of 3GPP TS 23.280 [36] and applies to the MCPTT scenario of normal group creation by an MC administrator and user regrouping operations by an authorized user/dispatcher. To establish the security context for the group, the GMS follows the procedures in clause 5.7 to create a new GMK and GMK-ID.

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

5.2.3 Test description

5.2.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- E-UTRA related parameters are set to the default parameters for the basic single cell environment, as defined in TS 36.508 [20] clause 4.4.

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10, is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

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	Make the MCVideo User select the default MCVideo Group A. NOTE 1: This is expected to be done via a suitable implementation dependent mechanism and may be manually or automatically initiated.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC related actions which step 1 above will trigger are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages being exchanged.	-	-	-	-
2	Make the MCVideo User request the creation of a new group, MCVideo Group B, for communication with the user and two other users, MCVideo Client B and MCVideo Client C. NOTE 1: This is expected to be done via a suitable implementation dependent mechanism and may be manually or automatically initiated.	-	-	-	-
3	Check: Does the UE (MCVideo Client) send a HTTP PUT to the SS (MCVideo Server) to request creation of the new group?	-->	HTTP PUT	1	P
4	The SS (MCVideo Server) sends a SIP NOTIFY informing that the new group has been created and supplies the group configuration data.	<--	SIP NOTIFY	-	-
5	The UE (MCVideo Client) sends a SIP 200 (OK) message to the SS.	-->	SIP 200 (OK)	-	-
6	The SS (MCVideo Server) sends a HTTP 201 (Created) containing the new group identifier.	<--	HTTP 201 (Created)	-	-
7	Check: Does the UE (MCVideo Client) notify the user that the MCVideo User is now part of Group C? NOTE 2: This is expected to be done via a suitable implementation dependent MMI.	-	-	1	P
8	Make the MCVideo User request the creation of a new group, MCVideo Group C, for communication with the user and two other users, MCVideo Client B and MCVideo Client C. NOTE 1: This is expected to be done via a suitable implementation dependent mechanism and may be manually or automatically initiated.	-	-	-	-
9	The UE (MCVideo Client) sends a HTTP PUT to the SS to request creation of the new group.	-->	HTTP PUT	-	-
10	The SS (MCVideo Server) sends a SIP NOTIFY informing that the new group has been created and supplies the group configuration data.	<--	SIP NOTIFY	-	-
11	The UE sends a SIP 200 (OK) message to the SS.	-->	SIP 200 (OK)	-	-
12	The SS (MCVideo Server) sends a HTTP 201 (Created) containing the new group identifier.	<--	HTTP 201 (Created)	-	-
13	Make the MCVideo User request the creation of a temporary group formed from MCVideo Group B and MCVideo Group C to communicate with itself and MCVideo Client B and MCVideo Client C. NOTE 1: This is expected to be done via a suitable implementation dependent mechanism and may be manually or automatically initiated.	-	-	-	-

14	Check: Does the UE (MCVideo Client) send a HTTP POST to the SS to request creation of the new temporary group?	-->	HTTP POST	2	P
15	The SS (MCVideo Server) sends a HTTP 409 (Conflict).	<--	HTTP 409 (Conflict)	-	-
16	Check: Does the UE (MCVideo Client) send a HTTP POST to the SS to request creation of the new temporary group?	-->	HTTP POST	2	P
17	The SS (MCVideo Server) sends a SIP NOTIFY informing that the new group has been created and supplies the group configuration data.	<--	SIP NOTIFY	-	-
18	The UE (MCVideo Client) sends a SIP 200 (OK) message to the SS.	-->	SIP 200 (OK)	-	-
19	The SS (MCVideo Server) sends a HTTP 200 (OK).	<--	HTTP 200 (OK)	-	-
20	Check: Does the UE (MCVideo Client) notify the user that the MCVideo User is now part of a temporary group? NOTE 2: This is expected to be done via a suitable implementation dependent MMI.	-	-	2	P
21	Make the MCVideo User request tear down of the temporary group. NOTE 1: This is expected to be done via a suitable implementation dependent mechanism and may be manually or automatically initiated.	-	-	-	-
22	Check: Does the UE (MCVideo Client) send a HTTP DELETE to the SS to request tear down of the temporary group?	-->	HTTP DELETE	3	P
23	The SS (MCVideo Server) sends a SIP NOTIFY informing that the temporary group has been removed.	<--	SIP NOTIFY	-	-
24	The UE (MCVideo Client) sends a SIP 200 (OK) message to the SS.	-->	SIP 200 (OK)	-	-
25	The SS (MCVideo Server) sends a HTTP 200 (OK) indicating group tear down completed.	<--	HTTP 200 (OK)	-	-
26	Check: Does the UE (MCVideo Client) notify the user that the MCVideo User is no longer part of the temporary group? NOTE 2: This is expected to be done via a suitable implementation dependent MMI.	-	-	3	P
-	EXCEPTION: SS (MCVIDEO Server) releases the E-UTRA connection.	-	-	-	-

5.2.3.3 Specific message contents

Table 5.2.3.3-1: HTTP PUT (Step 3, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.4.4-1, condition GROUPCONFIG

Table 5.2.3.3-2: HTTP PUT (Step 9, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.4.4-1, condition GROUPCONFIG

Table 5.2.3.3-3: SIP NOTIFY (Step 4, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME-Content-Type	"application/mikey"			
mikey	As described in Table 5.2.3.3-5	MIKEY message, containing the GMK	TS 33.179 [15]	
MCVideo-Info				
mcvideo-Params				
mcvideo-calling-group-id	px_MCVideo_Group_B_ID	Group identifier	TS 24.481 [11]	

Table 5.2.3.3-4: SIP NOTIFY (Step 10, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME-Content-Type	"application/mikey"			
mikey	As described in Table 5.2.3.3-6	MIKEY message, containing the GMK	TS 33.179 [15]	
MCVideo-Info				
mcvideo-Params				
mcvideo-calling-group-id	px_MCVideo_Group_C_ID	Group identifier	TS 24.481 [11]	

Table 5.2.3.3-5: MIKEY-SAKKE I_MESSAGE (Step 4, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.9.1-1				
Information Element	Value/remark	Comment	Reference	Condition
General Extension payload				
MCVideo Group ID	px_MCVideo_Group_B_ID	Group identifier	TS 33.179 [15]	

Table 5.2.3.3-6: MIKEY-SAKKE I_MESSAGE (Step 10, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.9.1-1				
Information Element	Value/remark	Comment	Reference	Condition
General Extension payload				
MCVideo Group ID	px_MCVideo_Group_C_ID	Group identifier	TS 33.179 [15]	

Table 5.2.3.3-7: HTTP 201 (Created) (Step 6, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.4.7-1, condition GROUPCONFIG				
NOTE:	ue-group-configuration is as specified in TS 36.579-1 [2], Table 5.5.7.1-3 with MCVideoGroupID specified as px_MCVideo_Group_B_ID			

Table 5.2.3.3-8: HTTP 201 (Created) (Step 12, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.4.7-1, condition GROUPCONFIG				
NOTE:	ue-group-configuration is as specified in TS 36.579-1 [2], Table 5.5.7.1-3 with MCVideoGroupID specified as px_MCVideo_Group_C_ID			

Table 5.2.3.3-9: HTTP POST (Step 14 & 16, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.4.3-1				
Information Element	Value/remark	Comment	Reference	Condition
Request-line				
Method	"POST"			
Request-URI	px_MCVideo_XCAP_Group_Config_URI	Points to the group configuration document	TS 24.481 [11]	
Content-Type	application/vnd.3gpp.GMOP+xml; charset="utf-8			
Message-body				
gmop:document				
xmlns	"urn:oma:xml:poc:list-service"	list-service xml namespace identifier	TS 24.481 [11]	
xmlns:rl	"urn:ietf:params:xml:ns:resource-lists"	resource-lists xml namespace identifier	TS 24.481 [11]	
xmlns:cp	"urn:ietf:params:xml:ns:common-policy"	common-policy xml namespace identifier	TS 24.481 [11]	
xmlns:ocp	"urn:oma:xml:xdm:common-policy"	common-policy xml namespace identifier	TS 24.481 [11]	
xmlns:oxe	"urn:oma:xml:xdm:extensions"	extensions xml namespace identifier	TS 24.481 [11]	
xmlns:rmcvideo	"urn:3gpp:ns:mcvideoGroupInfo:1.0"	MCVideo group info namespace identifier	TS 24.481 [11]	
xmlns:gmop	"urn:3gpp:ns:mcvideoGMOP:1.0"			
gmop:request				
group				
list-service				
uri	temp group uri	uri of the temporary MCVideo group	TS 24.481 [11]	A1, A2
invite-members	"true"	Allow users to invite members to this group	TS 24.481 [11]	
supported-services				
service-enabler	"urn:urn-7:3gpp-service.ims.icsi.mcvideo"			
MCVideo-group-IDs				
MCVideo-group-id	px_MCVideo_Group_B_ID	uri of the group to be part of the temporary group	TS 24.481 [11]	
MCVideo-group-Id	px_MCVideo_Group_C_ID	uri of the group to be part of the temporary group	TS 24.481 [11]	

Table 5.2.3.3-10: HTTP 409 (Conflict) (Step 15, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.4.9-1				
---	--	--	--	--

Table 5.2.3.3-11: SIP NOTIFY (Step 17, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME-Content-Type	"application/mikey"			
mikey	As described in Table 5.2.3.3-11	MIKEY message, containing the GMK	TS 33.179 [15]	
MCVideo-Info				
mcVideo-Params				
mcVideo-calling-group-id	px_MCVideo_Group_T_ID	Group identifier	TS 24.481 [11]	

Table 5.2.3.3-12: MIKEY-SAKKE I_MESSAGE (Step 4, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.9.1-1				
Information Element	Value/remark	Comment	Reference	Condition
General Extension payload				
MCVideo Group ID	px_MCVideo_Group_T_ID	Group identifier	TS 33.179 [15]	

Table 5.2.3.3-13: HTTP 200 (OK) (Step 19, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.4.10-1, condition GROUPCONFIG				
NOTE: ue-group-configuration is as specified in TS 36.579-1 [2], Table 5.5.7.1-1 with MCVideoGroupID specified as px_MCVideo_Group_T_ID.				

Table 5.2.3.3-14: HTTP DELETE (Step 22, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.4.5-1, condition GROUPCONFIG				
--	--	--	--	--

Table 5.2.3.3-15: SIP NOTIFY (Step 23, Table 5.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME-Content-Type	"application/mikey"			
mikey	As described in Table 5.2.3.3-3 and 5.2.3.3-4	MIKEY message, containing the GMK	TS 33.179 [15]	
MCVideo-Info				
mcvideo-Params				
mcvideo-calling-group-id	px_MCVideo_Group_T_ID	Group identifier	TS 24.481 [11]	

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

5.3.1 Test Purpose (TP)

(1)

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

(2)

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

(3)

```

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

```

(4)

```

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

```

(5)

```

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

```

(6)

```

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

```

(7)

```

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

```

(8)

```

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

```

(9)

```

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

```

}

5.3.2 Conformance requirements

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

[TS 24.281, clause 8.2.1.2]

In order:

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

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

In the SIP PUBLISH request, the MCVideo client:

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

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

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

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

[TS 24.281, clause 8.2.1.3]

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

In order to discover MCVideo groups:

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

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

In the SIP SUBSCRIBE request, the MCVideo client:

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

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

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

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

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

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

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

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

[TS 24.281, clause 8.2.1.4]

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

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

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

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

[TS 24.281, clause 8.2.1.5]

Upon receiving a SIP MESSAGE request containing:

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

then the MCVideo client:

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

5.3.3 Test description

5.3.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo Server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [20] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble:
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

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	Make the MCVideo User send a request to discover which groups the MCVideo User is affiliated to and to subscribe to affiliation status changes for the MCVideo User. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo Client) send a SIP SUBSCRIBE message to subscribe to its own affiliation status changes?	-->	SIP SUBSCRIBE	1	P
3	The SS (MCVideo Server) responds to the SIP SUBSCRIBE message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
4	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the MCVideo USER with GROUP A is "affiliated", but no other group is "affiliated".	<--	SIP NOTIFY	-	-
5	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
6	Make the MCVideo User send a request to affiliate to a MCVideo group, GROUP D. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
7	Check: Does the UE (MCVideo Client) send a SIP PUBLISH message to affiliate with GROUP D?	-->	SIP PUBLISH	2	P
8	The SS (MCVideo Server) responds to the SIP PUBLISH message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
9	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the MCVideo USER with GROUP D is "affiliating"	<--	SIP NOTIFY	-	-
10	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
11	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the MCVideo USER with GROUP D is "affiliated".	<--	SIP NOTIFY	-	-
12	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
13	Check: Does the UE (MCVideo client) notify the user that the MCVideo User is now affiliated with GROUP D? NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	1	P
14	Make the MCVideo User send a request to discover which groups a target user is affiliated to and to subscribe to affiliation status changes for that target user. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
15	Check: Does the UE (MCVideo Client) send a SIP SUBSCRIBE message to subscribe to affiliation status changes of a target user?	-->	SIP SUBSCRIBE	3	P
16	The SS responds to the SIP SUBSCRIBE message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-

17	Make the MCVideo User send a request to have a target user affiliate to a MCVideo group, GROUP D (mandatory mode). NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
18	Check: Does the UE (MCVideo Client) send a SIP PUBLISH message to have to target user affiliate with GROUP D?	-->	SIP PUBLISH	4	P
19	The SS (MCVideo Server) responds to the SIP PUBLISH message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
20	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the target user with GROUP D is "affiliating".	<--	SIP NOTIFY	-	-
21	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
22	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the target user with GROUP D is "affiliated".	<--	SIP NOTIFY	-	-
23	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
24	Check: Does the UE (MCVideo Client) notify the user that the target user is now affiliated with GROUP D? NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	3	P
25	Make the MCVideo User send a request to have a target user de-affiliate to a MCVideo group, GROUP D (mandatory mode). NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
26	Check: Does the UE (MCVideo Client) send a SIP PUBLISH message to have the target user de-affiliate with GROUP D?	-->	SIP PUBLISH	5	P
27	The SS (MCVideo Server) responds to the SIP PUBLISH message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
28	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the target user with GROUP D is "disaffiliating".	<--	SIP NOTIFY	-	-
29	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
30	Check: Does the UE (MCVideo Client) notify the user that the target user is now de-affiliated with GROUP D? NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	3	P
31	Make the MCVideo User send a request to have a target user affiliate to a MCVideo group, GROUP D (negotiated mode). NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
32	Check: Does the UE (MCVideo Client) send a SIP MESSAGE to have a target user affiliate with GROUP D via negotiated mode?	-->	SIP MESSAGE	6	P
33	The SS (MCVideo Server) responds to the SIP MESSAGE message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
34	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the target user with GROUP D is "affiliating".	<--	SIP NOTIFY	-	-
35	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
36	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the target user with GROUP D is "affiliated".	<--	SIP NOTIFY	-	-

37	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
38	Check: Does the UE (MCVideo Client) notify the user that the target user is now affiliated with GROUP D? NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	3	P
39	Make the MCVideo User send a request to de-subscribe from affiliation status changes of a target user. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
40	Check: Does the UE (MCVideo Client) send a SIP SUBSCRIBE message with the Expires header field set to zero to de-subscribe from affiliation status changes for a target user?	-->	SIP SUBSCRIBE	7	P
41	The SS (MCVideo Server) responds to the SIP SUBSCRIBE message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
42	Make the MCVideo User send a request to de-affiliate from a MCVideo group, GROUP D. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
43	Check: Does the UE (MCVideo Client) send a SIP PUBLISH message to de-affiliate with GROUP D?	-->	SIP PUBLISH	8	P
44	The SS (MCVideo Server) responds to the SIP MESSAGE message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
45	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the user with GROUP D is "disaffiliating".	<--	SIP NOTIFY	-	-
46	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
47	Check: Does the UE (MCVideo Client) notify the user that the MCVideo User is no longer affiliated with GROUP D? NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	1	P
48	The SS (MCVideo Server) sends a SIP MESSAGE to the MCVideo Client to affiliate the MCVideo User to GROUP D via negotiated mode.	<--	SIP MESSAGE	-	-
49	Check: Does the UE (MCVideo Client) send a SIP 200 (OK) message in response to the SIP MESSAGE message?	-->	SIP 200 (OK)	9	P
50	Check: Does the UE (MCVideo Client) notify the user that another user is requesting the MCVideo User affiliate to GROUP D? NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	9	P
51	Make the MCVideo User accept to affiliate to GROUP D. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
52	Check: Does the UE (MCVideo Client) send a SIP PUBLISH message to affiliate with GROUP D?	-->	SIP PUBLISH	9	P
53	The SS (MCVideo Server) responds to the SIP PUBLISH message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
54	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the MCVideo USER with GROUP D is "affiliating"	<--	SIP NOTIFY	-	-
55	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)		

56	The SS (MCVideo Server) sends a SIP NOTIFY informing that the affiliation status of the MCVideo USER with GROUP D is "affiliated".	<--	SIP NOTIFY	-	-
57	The UE (MCVideo Client) responds with a SIP 200 (OK).	-->	SIP 200 (OK)	-	-
58	Check: Does the UE (MCVideo Client) notify the user that the MCVideo User is now affiliated with GROUP D? NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	1	P
-	EXCEPTION: SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-

5.3.3.3 Specific message contents

Table 5.3.3.3-1: SIP SUBSCRIBE (step 2, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.14-1, condition GROUPCONFIG AND MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		MCVideo Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MCVideo-Info	As described in Table 5.3.3.3-2			

Table 5.3.3.3-2: MCVideo-INFO in SIP SUBSCRIBE (Table 5.3.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-1, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcVideoinfo				
mcVideo-Params				
mcVideo-request-uri	px_MCVideo_ID_User_A			

Table 5.3.3.3-3: SIP SUBSCRIBE (step 15, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.14-1, condition MCVIDEO, GROUPCONFIG				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		MCVideo Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MIME body part		SIMPLE-FILTER		
MIME-part-headers				
Content-Type	"application/simple-filter+xml"			
MIME-part-body	SIMPLE-FILTER as described in Table 5.5.3.6-3		TS 24.282 [87] subclause 8.4.2	

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_ID_User_B			

Table 5.3.3.3-5: SIMPLE-FILTER in SIP SUBSCRIBE (Table 5.3.3.3-3)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.6-3				
Information Element	Value/remark	Comment	Reference	Condition
filter-set	px_MCVideo_ID_User_B			
nc-bindings	px_MCVideo_Client_B_ID			

Table 5.3.3.3-6: SIP SUBSCRIBE (step 40, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.14-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
delta-seconds	"0"			
Message-body				
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 5.5.3.2.1-3		TS 24.282 [87] clause D.1	
MIME body part		SIMPLE-FILTER		
MIME-part-headers				
Content-Type	"application/simple-filter+xml"			
MIME-part-body	SIMPLE-FILTER as described in Table 5.5.3.6-3		TS 24.282 [87] subclause 8.4.2	

Table 5.3.3.3-7: MCVideo-INFO in SIP SUBSCRIBE (Table 5.3.3.3-6)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_ID_User_B			

Table 5.3.3.3-8: SIMPLE-FILTER in SIP SUBSCRIBE (Table 5.3.3.3-6)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.6-2				
Information Element	Value/remark	Comment	Reference	Condition
filter-set	px_MCVideo_Client_B_ID			
nc-bindings	px_MCVideo_Client_B_ID			

Table 5.3.3.3-9: SIP 200 (OK) (steps 3, 8, 16, 19, 33, 53, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
delta-seconds	"4294967295"			
Content-Type				
Content-Length	"0"			
Message-body	not present	No message body included - end of SIP message		

Table 5.3.3.3-10: SIP 200 (OK) (steps 27, 41, 44, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
delta-seconds	"0"			
Content-Type				
Content-Length	"0"			
Message-body	not present	No message body included - end of SIP message		

Table 5.3.3.3-11: SIP 200 (OK) (step 49, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
delta-seconds	"4294967295"			
Content-Type				
Content-Length	"0"			
Message-body	not present	No message body included - end of SIP message		

Table 5.3.3.3-12: SIP PUBLISH (steps 6, 52, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.11-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
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 5.5.3.2.1-3		TS 24.282 [87] clause D.1	
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.3.1	

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_ID_User_A			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity				
tuple id				
status				
affiliation				
group	px_MCVideo_Group_D_ID			
status	not present			
expires	not present			
p-id	any allowed value			

Table 5.3.3.3-15: SIP PUBLISH (step 18, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.11-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
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 5.5.3.2.1-3		TS 24.282 [87] clause D.1	
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.3.1	

Table 5.3.3.3-16: MCVideo-INFO in SIP PUBLISH (Table 5.3.3.3-15)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_ID_User_B			

Table 5.3.3.3-17: PIDF in SIP PUBLISH (Table 5.3.3.3-15)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity	px_MCVideo_Client_B_ID			
tuple id	px_MCVideo_Client_B_ID			
status				
affiliation				
group	px_MCVideo_Group_D_ID			
status	not present			
expires	not present			
p-id	any allowed value			

Table 5.3.3.3-18: SIP PUBLISH (step 26, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.11-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
delta-seconds	"0"			
Content-Type				
Content-Length				
Message-body				
MIME body part		MCVideo Info		
Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MIME-part-body	MCVideo-Info as described in Table 5.5.3.2.1-3		TS 24.282 [87] clause D.1	
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.3.1	

Table 5.3.3.3-19: MCVideo-INFO in SIP PUBLISH (Table 5.3.3.3-18)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_ID_User_B			

Table 5.3.3.3-20: PIDF in SIP PUBLISH (Table 5.3.3.3-18)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity	px_MCVideo_Client_B_ID			
tuple id	px_MCVideo_Client_B_ID			
status				
affiliation				
group	px_MCVideo_Group_D_ID			
status	not present			
expires	not present			
p-id	any allowed value			

Table 5.3.3.3-21: SIP PUBLISH (step 43, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.11-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Expires				
delta-seconds	"0"			
Content-Type				
Content-Length				
Message-body				
MIME body part		MCVideo Info		
Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MIME-part-body	MCVideo-Info as described in Table 5.5.3.2.1-3		TS 24.282 [87] clause D.1	
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.3.1	

Table 5.3.3.3-22: MCVideo-INFO in SIP PUBLISH (Table 5.3.3.3-21)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_ID_User_A			

Table 5.3.3.3-23: PIDF in SIP PUBLISH (Table 5.3.3.3-21)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity				
tuple id				
status				
affiliation				
group	px_MCVideo_Group_D_ID			
status	not present			
expires	not present			
p-id	any allowed value			

Table 5.3.3.3-24: SIP NOTIFY (step 4, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.4.1	

Table 5.3.3.3-25: PIDF in SIP NOTIFY (Table 5.3.3.3-24)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity				
tuple id				
status				
affiliation				
status				
affiliating	not present			
affiliated				
p-id	not present			

Table 5.3.3.3-26: SIP NOTIFY (steps 9, 54, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.4.1	

Table 5.3.3.3-27: PIDF in SIP NOTIFY (Table 5.3.3.3-26)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity				
tuple id				
status				
affiliation				
group	px_MCVideo_Group_D_ID			

Table 5.3.3.3-28: SIP NOTIFY (steps 11, 56, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.4.1	

Table 5.3.3.3-29: PIDF in SIP NOTIFY (Table 5.3.3.3-28)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity				
tuple id				
status				
affiliation				
group	px_MCVideo_Group_D_ID			
status				
affiliating	not present			
affiliated				

Table 5.3.3.3-30: SIP NOTIFY (steps 20, 34, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-3, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.4.1	

Table 5.3.3.3-31: PIDF in SIP NOTIFY (Table 5.3.3.3-30)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity	px_MCVideo_Client_B_ID			
tuple id	px_MCVideo_Client_B_ID			
status				
affiliation				
group	px_MCVideo_Group_D_ID			

Table 5.3.3.3-32: SIP NOTIFY (steps 22, 36, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.4.1	

Table 5.3.3.3-33: PIDF in SIP NOTIFY (Table 5.3.3.3-32)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity	px_MCVideo_Client_B_ID			
tuple id	px_MCVideo_Client_B_ID			
status				
affiliation				
group	px_MCVideo_Group_D_ID			
status				
affiliating	not present			
affiliated				

Table 5.3.3.3-34: SIP NOTIFY (step 28, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.4.1	

Table 5.3.3.3-35: PIDF in SIP NOTIFY (Table 5.3.3.3-34)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity	px_MCVideo_Client_B_ID			
tuple id	px_MCVideo_Client_B_ID			
status				
affiliation				
group	px_MCVideo_Group_D_ID			
status				
affiliating	not present			
disaffiliating				

Table 5.3.3.3-36: SIP NOTIFY (step 45, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		PIDF		
MIME-part-headers				
Content-Type	"application/pidf+xml"			
MIME-part-body	PIDF as described in Table 5.5.3.5-3		TS 24.282 [87] subclause 8.4.1	

Table 5.3.3.3-37: PIDF in SIP NOTIFY (Table 5.3.3.3-36)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.5-3				
Information Element	Value/remark	Comment	Reference	Condition
presence entity				
tuple id				
status				
affiliation				
group	px_MCVideo_Group_D_ID			
status				
affiliating	not present			
disaffiliating				

Table 5.3.3.3-38: SIP MESSAGE (step 32, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.7.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME body part		MCVideo Info		
MIME-part-headers				
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MIME-part-body	MCVideo-Info as described in Table 5.5.3.2.1-3			
MIME body part		Affiliation-Command		
MIME-part-headers				
MIME-Content-Type	"application/vnd.3gpp.mcvideo-affiliation-command+xml"			
MIME-part-body	MCVideo-Affiliation-Command as described in Table 5.5.3.7-3		TS 24.379 [9] clause F.4	

Table 5.3.3.3-39: MCVideo-INFO in SIP MESSAGE (Table 5.3.3.3-38)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_ID_User_B			

Table 5.3.3.3-40: MCVideo-AFFILIATION-COMMAND in SIP MESSAGE (Table 5.3.3.3-38)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.7-3				
Information Element	Value/remark	Comment	Reference	Condition
command-list				
affiliate				
group	px_MCVideo_Group_D_ID			

Table 5.3.3.3-41: SIP MESSAGE (step 48, Table 5.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.7.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
Content-Length				
Message-body				
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MCVideo-Info	As described in Table 5.3.3.3-42			
MIME-Content-Type	"application/vnd.3gpp.mcvideo-affiliation-command+xml"			
MCVideo-Affiliation-Command	As described in Table 5.3.3.3-43			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-3				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_ID_User_A			

Table 5.3.3.3-43: MCVideo-AFFILIATION-COMMAND in SIP MESSAGE (Table 5.3.3.3-41)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.7-3				
Information Element	Value/remark	Comment	Reference	Condition
command-list				
affiliate				
group	px_MCVideo_Group_D_ID			

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

5.4.1 Test Purpose (TP)

(1)

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

(2)

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

(3)

```

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

```

5.4.2 Conformance requirements

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

[TS 24.281, clause 7.2.4]

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

In the SIP SUBSCRIBE request, the MCVideo client:

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

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

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

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

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

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

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

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

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

5.4.3 Test description

5.4.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- E-UTRA related parameters are set to the default parameters for the basic single cell environment, as defined in TS 36.508 [20] clause 4.4.

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10, is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

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	Make the MCVIDEO User request to verify the currently active MCVideo service settings of the UE (MCVIDEO Client) and to receive later notifications. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVIDEO relevant messages exchanged.	-	-	-	-
2	Check: Does the UE (MCVIDEO Client) send a SIP SUBSCRIBE message to request to verify the currently active MCVideo service settings of the UE (MCVIDEO Client)?	-->	SIP SUBSCRIBE	1	P
3	The SS (MCVIDEO Server) responds to the SIP SUBSCRIBE message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
4	The SS (MCVIDEO Server) sends a SIP NOTIFY with the currently active MCVideo service settings of the UE (MCVIDEO Client).	<--	SIP NOTIFY	-	-
5	The UE (MCVIDEO Client) responds with a SIP 200 (OK) message.	-->	SIP 200 (OK)		
-	EXCEPTION: SS (MCVIDEO Server) releases the E-UTRA connection.	-	-	-	-
6	Make the MCVIDEO User request to re-subscribe to MCVIDEO service settings and to receive later notifications. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVIDEO relevant messages exchanged.	-	-	-	-
7	Check: Does the UE (MCVIDEO Client) send a SIP SUBSCRIBE message to re-subscribe to MCVIDEO service settings and to receive later notifications?	-->	SIP SUBSCRIBE	2	P
8	The SS (MCVIDEO Server) responds to the SIP SUBSCRIBE message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
9	The SS (MCVIDEO Server) sends a SIP NOTIFY with the currently active MCVideo service settings of the UE (MCVIDEO Client).	<--	SIP NOTIFY	-	-
10	The UE (MCVIDEO Client) responds with a SIP 200 (OK) message.	-->	SIP 200 (OK)		
-	EXCEPTION: SS (MCVIDEO Server) releases the E-UTRA connection.	-	-	-	-
11	Make the MCVIDEO User request to de-subscribe to MCVIDEO service settings. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVIDEO relevant messages exchanged.	-	-	-	-

12	Check: Does the UE (MCVIDEO Client) send a SIP SUBSCRIBE message to de-subscribe to MCVIDEO service settings?	-->	SIP SUBSCRIBE	3	P
13	The SS (MCVIDEO Server) responds to the SIP SUBSCRIBE message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
-	EXCEPTION: SS (MCVIDEO Server) releases the E-UTRA connection.	-	-	-	-

5.4.3.3 Specific message contents

Table 5.4.3.3-1: SIP SUBSCRIBE (steps 2, 7, Table 5.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.14-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Accept			TS 24.281 [26] clause 7.2.4	
media-range	"application/poc-settings+xml"			
Expires			TS 24.281 [26] clause 7.2.4	
value	"4294967295"			
Event			TS 24.281 [26] clause 7.2.4	
event-type	"poc-settings"			
Content-Type				
media-type	"application/vnd.3gpp.mcvideo-info+xml"			
Message-body				
MIME body part		MCVideo Info		
MIME-part-body	MCVideo-Info as described in Table 5.4.3.3-2			
MIME body part		SIMPLE-FILTER		
MIME-part-body	not present			

Table 5.4.3.3-2: MCVIDEO-Info (Table 5.4.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2				
Information Element	Value/remark	Comment	Reference	Condition
mcvideo-info				
mcvideo-Params				
mcvideo-request-uri	px_MCVideo_ID_User_A			
mcvideo-calling-user-id	not present			
mcvideo-called-party-id	not present			
emergency-ind	not present			
alert-ind	not present			
imminentperil-ind	not present			
anyExt	not present			

Table 5.4.3.3-3: SIP 200 (OK) (steps 3, 8, 13, Table 5.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition INVITE-RSP, MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

Table 5.4.3.3-4: SIP NOTIFY (steps 4, 9, Table 5.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.8-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Contact				
feature-param	not present	"+g.3gpp.icsi-ref=urn:urn-7:3gpp-service.ims.icsi.mcvideo.sds" is not present		
Content-Type				
media-type	"application/poc-settings+xml"			
Message-body				
MIME body part		PoC-Settings		
MIME-part-body	PoC-Settings as described in Table 5.4.3.3-5			

Table 5.4.3.3-5: PoC-Settings (Table 5.4.3.3-4)

Derivation Path: RFC 4354 [X]				
Information Element	Value/remark	Comment	Reference	Condition
poc-settings				
incoming-session-barring	"false"			
answer-mode	"automatic"			
incoming-personal-alert-barring	"false"			
simultaneous-sessions-support	"true"			
selected-user-profile-index	element identifying the active MCVideo user profile			

Table 5.4.3.3-6: SIP 200 (OK) (steps 5, 10, Table 5.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP, MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type				
	not present			
Content-Length				
value	"0"	No message body included		

Table 5.4.3.3-7: SIP SUBSCRIBE (step 12, Table 5.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.14-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Accept			TS 24.281 [26] clause 7.2.4	
media-range	"application/poc-settings+xml"			
Expires			TS 24.281 [26] clause 7.2.4	
value	"0"			
Event			TS 24.281 [26] clause 7.2.4	
event-type	"poc-settings"			
Content-Type				
media-type	"application/vnd.3gpp.mcvideo-info+xml"			
Message-body				
MIME body part		MCVideo Info		
MIME-part-body	MCVideo-Info as described in Table 5.4.3.3-2			
MIME body part		SIMPLE-FILTER		
MIME-part-body	not present			

6 On-Network Test Scenarios

6.1 Group Calls

6.1.1 Pre-Arranged Group Call

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

6.1.1.1.1 Test Purpose (TP)

(1)

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

(2)

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

(3)

```

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

```

(4)

```

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

```

(5)

```

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

```

(6)

```

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

```

(7)

```

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

```

(8)

```

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

```

(9)

```

with {the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when {the MCVideo User requests to terminate the ongoing MCVideo Group Call}
}

```

```

    then {the UE (MCVideo Client) sends a Transmission End Request, acknowledges the Transmission
    End Response from the SS (MCVideo Server), and sends a SIP BYE message, and leaves the MCVideo
    Session }
  }

```

6.1.1.1.2 Conformance requirements

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

[TS 24.281, clause 6.2.3.1.2]

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

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

[TS 24.281, clause 6.2.3.1.1]

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

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

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

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

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

[TS 24.281, clause 9.2.1.2.1.1]

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

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo prearranged group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;
- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;
- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[TS 24.281, clause 9.2.1.2.1.3]

This subclause covers both on-demand session.

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

- 1) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress emergency group state and this is an unauthorized request for an MCVideo emergency call as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorized to upgrade the MCVideo group session to an in-progress emergency group state; and
 - b) shall skip the remaining steps of the current subclause;
- 2) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress imminent peril state and this is an unauthorized request for an MCVideo imminent peril group call as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorized to upgrade the MCVideo group session to an in-progress imminent peril group state; and
 - b) shall skip the remaining steps of the current subclause;
- 3) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo emergency call, the MCVideo client:

- a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.1;
 - b) if an indication of an MCVideo emergency alert is to be included, shall perform the procedures specified in subclause 6.2.9.1 for the MCVideo emergency alert trigger; and
 - c) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2.
- 4) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo imminent peril call, the MCVideo client:
- a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.9; and
 - b) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 5) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1;
- 6) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

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

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and
- 2) shall perform the actions specified in subclause 6.2.8.1.4.

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

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

[TS 24.281, clause 9.2.1.2.1.4]

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

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

The MCVideo client:

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

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

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

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

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

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

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

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

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

[TS 24.281, clause 9.2.1.2.1.5]

This subclause covers on-demand session.

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

The MCVideo client:

- 1) if the MCVideo user is not authorized to cancel the in-progress imminent peril group state of the MCVideo group as determined by the procedures of subclause 6.2.8.1.10, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorized to cancel the in-progress imminent peril group state of the MCVideo group; and
 - b) shall skip the remaining steps of the current subclause;
- 2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.11; and

- 3) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;
- 4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:
 - a) the <session-type> element set to a value of "prearranged"; and
 - b) the <mcvideo-request-uri> element set to the group identity;

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

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

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

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

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

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

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

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

[TS 24.281, clause 9.2.1.2.1.6]

This subclause covers both on-demand session.

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

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

- 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call; and
 - b) shall set the MCVideo imminent peril group state to "MIG 2: in-progress";
- 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "false":
 - i) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and the MCVideo ID of the MCVideo user cancelling the MCVideo emergency alert; and
 - ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:
 - A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and
 - B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user shall set the MCVideo emergency alert state to "MVEA 1: no-alert";
 - c) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and
 - d) if the MCVideo emergency group call state of the group is set to "MVEGC 3: emergency-call-granted", shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable";
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call;
 - b) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and
 - c) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-gc-capable";
- 5) shall check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;
- 10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and

11) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 9.2.1.3.3.1]

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

[TS 24.281, clause 9.2.1.4.7]

In the procedures in this subclause:

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

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

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

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

- 2) if received SIP re-INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in subclause 6.3.3.1.17;
- 3) if the received SIP re-INVITE request contains an unauthorized request for an MCVideo emergency call as determined by subclause 6.3.3.1.13.2:
 - a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response as specified in subclause 6.3.3.1.14; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 4) if the received SIP re-INVITE request contains an imminent peril indication set to "true" for an MCVideo imminent peril group call and this is an unauthorized request for an MCVideo imminent peril group call as determined by subclause 6.3.3.1.13.6, shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response with the following clarifications:
 - a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false"; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 5) if a Resource-Priority header field is included in the received SIP re-INVITE request:
 - a) if the Resource-Priority header field is set to the value indicated for emergency calls and the SIP re-INVITE request does not contain an emergency indication and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the rest of the steps; and
 - b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the SIP re-INVITE request does not contain an imminent peril indication and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response and skip the rest of the steps;

- 6) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true" and is an authorized request to initiate an MCVideo emergency group call as determined by subclause 6.3.3.1.13.2, the controlling MCVideo function shall:
- i) shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency call;
 - ii) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorized request for an MCVideo emergency alert meeting the conditions specified in subclause 6.3.3.1.13.1, shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency alert;
 - iii) if the in-progress emergency state of the group is set to a value of "true":
 - A) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's emergency indication as specified in subclause 6.3.3.1.11, setting the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
 - C) if the in-progress imminent peril state of the group is set to a value of "true", shall set it to a value of "false"; and
 - iv) if the in-progress emergency state of the group is set to a value of "false":
 - A) shall set the value of the in-progress emergency state of the group to "true";
 - B) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in subclause 6.3.3.1.16;

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

Editor's Note: timers need to be defined.

- C) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other participants of the MCVideo group call as specified in subclause 6.3.3.1.6;
 - D) shall send the SIP re-INVITEs towards the other participants of the MCVideo group call; and
 - E) upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 7) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is an unauthorized request for an MCVideo emergency group call cancellation as determined by subclause 6.3.3.1.13.4:
- a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response;
 - b) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <emergency-ind> element set to a value of "true";
 - c) if an <alert-ind> element of the mcvideoinfo MIME body is included in the SIP re-INVITE request set to "false", and there is an outstanding MCVideo emergency alert for this MCVideo user, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set to a value of "true"; and
 - d) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 8) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is determined to be an authorized request for an MCVideo emergency call cancellation as specified in subclause 6.3.3.1.16 and the in-progress emergency state of the group is set to a value of "true" the controlling MCVideo function:
- a) shall set the in-progress emergency group state of the group to a value of "false";
 - b) shall clear the cache of the MCVideo ID of the MCVideo user as having an outstanding MCVideo emergency group call;

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

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

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

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

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

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

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

alert cancellation as determined by subclause 6.3.3.1.13.3, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;

- 7) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true", this is an authorized request for an MCVideo imminent peril group call and the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;

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

- 8) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and

- 9) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

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

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

[TS 24.281, clause 9.2.1.4.8]

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

In the procedures in this subclause:

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

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

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

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

- a) if the in-progress imminent peril state of the group is set to a value of "true" and this MCVideo user is indicating a new imminent peril indication:
 - i) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in subclause 6.3.3.1.11 with the following clarifications;
 - A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];
 - b) if the in-progress imminent peril state of the group is set to a value of "false";
 - i) set the value of the in-progress imminent peril state of the group to "true";
 - ii) generate SIP re-INVITE requests for the MCVideo imminent peril group call to participants in the MCVideo group call as specified in subclause 6.3.3.1.15;
 - iii) send the SIP re-INVITES to all of the other participants in the MCVideo group call;

- iv) for each of the affiliated members of the group not participating in the group call, generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in subclause 6.3.3.1.11 with the following clarifications:
 - A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
 - c) cache the information that this MCVideo user has initiated an MCVideo imminent peril call;
 - 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is an unauthorized request for an MCVideo imminent peril group call cancellation as determined by subclause 6.3.3.1.13.6 shall:
 - a) reject the SIP re-INVITE request with a SIP 403 (Forbidden) response to the SIP re-INVITE request; and
 - b) include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false";
 - c) send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11]; and
 - d) skip the rest of the steps;
 - 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is determined to be an authorized request for an MCVideo imminent peril call cancellation as specified in subclause 6.3.3.1.13.6 and the in-progress imminent peril state of the group to is set to a value of "true" the controlling MCVideo function shall:
 - a) set the in-progress imminent peril state of the group to a value of "false";
 - b) cache the information that this MCVideo user no longer has an outstanding MCVideo imminent peril group call;
 - c) generate SIP re-INVITES requests to the other participants in the MCVideo group call as specified in subclause 6.3.3.1.15. The MCVideo controlling function:
 - i) for each participant shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- NOTE 2: Subclause 6.3.3.1.14 will inform the affiliated and joined members of the cancellation of the MCVideo group's in-progress emergency state and the cancellation of the MCVideo emergency alert if applicable.
- d) for each of the affiliated members of the group not participating in the call shall:
 - i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's imminent peril call as specified in subclause 6.3.3.1.11;
 - ii) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and
 - iii) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];
 - 4) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.3.3.2.1;
 - 5) shall include the "norefersub" option tag in a Supported header field according to IETF RFC 4488 [31];
 - 6) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];
 - 7) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and
 - 8) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

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

[TS 24.581, clause 6.2.4.4.6]

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

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

[TS 24.581, clause 6.3.4.3.6]

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

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

[TS 24.581, clause 6.3.4.4.12]

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

1. if counter Cx (Simultaneous transmission video) has not reached its upper limit:
 - a. shall perform the actions specified in the subclause 6.3.4.4.2;
2. if counter Cx (Simultaneous transmission video) has reached its upper limit:
 - a. select one of the transmission participants with permission to send media without the pre-emptive priority or low effective priority;
 - b. shall stop timer T4 (Transmission Grant), if running;

- c. shall set the Reject Cause field in the Transmission Revoke message to #4 (Media Transmission pre-empted);
- d. shall enter the 'G: pending Transmission Revoke' state as specified in the subclause 6.3.4.5.2;
- e. shall insert the transmission participant into the active Transmission request queue to the position in front of all queued requests, if not inserted yet or update the position of the transmission participant in the active Transmission request queue to the position in front of all other queued requests, if already inserted; and
- f. shall send a Transmission Queue Position Info message to the requesting transmission participant, if negotiated support of queueing Transmission requests as specified in clause 14. The Queue Position Request message:
 - i. shall include the queue position and transmission priority in the Queue Info field; and
 - ii. if a group call is a broadcast group call, a system call, an emergency call, an imminent peril call, or a temporary group session, shall include the Transmission Indicator field with appropriate indications.

[TS 24.581, clause 6.3.5.3.9]

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

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

[TS 24.581, clause 6.3.5.4.8]

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

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

6.1.1.1.3 Test description

6.1.1.1.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.

- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

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 MCVideo User request the establishment of an MCVideo On-demand Pre-arranged Group Call using, Automatic Commencement Mode, with request for implicit Transmission Control. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo Client) send an initial SIP INVITE requesting the establishment of an MCVideo On-demand Pre-arranged Group Call, Automatic Commencement Mode, with implicit Transmission Control?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) responds to the UE (MCVideo Client) with a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo Server) sends a SIP 200 (OK) message to the UE (MCVideo Client), indicating that it has accepted the SIP INVITE request from the UE (MCVideo Client).	<--	SIP 200 (OK)	-	-
5	Check: Does the UE (MCVideo Client) send an acknowledgement to the SS (MCVideo Server)?	-->	SIP ACK	1	P
6	The SS (MCVideo Server) sends a Transmission Granted message to the UE (MCVideo Client).	<--	Transmission Granted	-	-
7	Check: Does the UE (MCVideo Client) send a Transmission Control ACK in response to Transmission Granted message from the SS (MCVideo Server)?	-->	Transmission Control ACK	2	P
8	Check: Does the UE (MCVideo Client) provide transmission granted notification to the MCVideo User? (NOTE 1)	-	-	1	P
9	Make the MCVideo User request to upgrade the Pre-arranged Group Call to a MCVideo Emergency Group Call. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo Client) send a SIP re-INVITE message to upgrade the On-demand Pre-arranged Group Call to a MCVideo Emergency Group Call?	-->	SIP re-INVITE	3	P
11	The SS (MCVideo Server) sends a SIP 100 (Trying) message to the UE (MCVideo Client).	<--	SIP 100 (Trying)	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
12	The SS (MCVideo Server) sends a SIP 200 (OK) message to the UE (MCVideo Client).	<--	SIP 200 (OK)	-	-
13	Check: Does the UE (MCVideo Client) send an acknowledgement to the SS (MCVideo Server)?	-->	SIP ACK	2	P
14	The SS (MCVideo Server) sends a Transmission Granted message to the UE (MCVideo Client).	<--	Transmission Granted	-	-
15	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message acknowledging the Transmission Granted message from the SS (MCVideo Server)?	-->	Transmission Control Ack	4	P
16	Check: Does the UE (MCVideo Client) provide notification to the MCVideo User that the Pre-arranged Group Call has been upgraded to an Emergency condition? (NOTE 1)	-	-	3	P
17	Make the MCVideo User request to cancel the MCVideo Emergency Group Call. (NOTE 1)	-	-	-	-
18	Check: Does the UE (MCVideo Client) send a SIP re-INVITE message to cancel the Emergency condition in the On-demand Pre-arranged Group Call?	-->	SIP re-INVITE	5	P
19	The SS (MCVideo Server) sends a SIP 100 (Trying) message to the UE (MCVideo Client).	<--	SIP 100 (Trying)	-	-
20	The SS (MCVideo Server) sends a SIP 200 (OK) to the UE (MCVideo Client) indicating that it has accepted the SIP re-INVITE request to cancel the emergency condition.	<--	SIP 200 (OK)	-	-
21	Check: Does the UE (MCVideo Client) send an acknowledgement to the SS (MCVideo Server)?	-->	SIP ACK	-	-
22	The SS (MCVideo Server) sends a Transmission Granted message to the UE (MCVideo Client).	<--	Transmission Granted	-	-
23	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message in response to the SS Transmission Granted message?	-->	Transmission Control Ack	2	P
24	Check: Does the UE (MCVideo Client) provide notification to the MCVideo User that the Pre-Arranged Group Call has been downgraded from an Emergency condition to a normal group call? (NOTE 1)	-	-	5	P
25	Make the MCVideo User upgrade the Pre-arranged Group Call to a MCVideo Imminent Peril Group Call. (NOTE 1)	-	-	-	-
26	Check: Does the UE (MCVideo Client) send a SIP re-INVITE message to upgrade the On-demand Pre-arranged Group Call to MCVideo Imminent Peril Group Call?	-->	SIP re-INVITE	6	P
27	The SS (MCVideo Server) sends a SIP 100 (Trying) message to the UE (MCVideo Client).	<--	SIP 100 (Trying)	-	-
28	The SS (MCVideo Server) sends a SIP 200 (OK) message to the UE (MCVideo Client) indicating that it has accepted the SIP re-INVITE request to upgrade to the Imminent Peril condition.	<--	SIP 200 (OK)	-	-
29	Check Does the UE (MCVideo Client) send an acknowledgement to the SS (MCVideo Server) ?	-->	SIP ACK	6	P
30	The SS (MCVideo Server) then sends a	<--	Transmission Granted	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	Transmission Granted message to the UE (MCVideo Client).				
31	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message in response to the Transmission Granted message from the SS (MCVideo Server)?	-->	Transmission Control Ack	7	P
32	Check: Does the UE (MCVideo Client) provide notification to the MCVideo User that the Pre-arranged Group Call has been upgraded to an Imminent Peril state? (NOTE 1)	-	-	6	P
33	Make the MCVideo User request to downgrade the Imminent Peril state. (NOTE 1)	-	-	-	-
34	Check: Does the UE (MCVideo Client) send a SIP re-INVITE message to cancel the Imminent Peril condition in the On-demand Pre-arranged Group Call?	-->	SIP re-INVITE	8	P
35	The SS (MCVideo Server) responds to the UE (MCVideo Client) with a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
36	The SS (MCVideo Server) sends a SIP 200 (OK) indicating that it has accepted the SIP re-INVITE request to downgrade to the Imminent Peril condition.	<--	SIP 200 (OK)	-	-
37	The UE MCVideo Client) sends an acknowledgement to the SS (MCVideo Server).	-->	SIP ACK	-	-
38	The SS (MCVideo Server) sends a Transmission Granted message to the UE (MCVideo Client) with an acknowledgement required	<--	Transmission Granted	-	-
39	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message in response to the SS (MCVideo Server) Transmission Granted message?	-->	Transmission Control Ack	2	P
40	Check: Does the UE (MCVideo Client) provide notification to the MCVideo User that the Imminent Peril state has been downgraded? (NOTE 1)	-	-	8	P
41	Make the MCVideo User request to end the transmission. (NOTE 1)	-	-	-	-
42	Check Does the UE (MCVideo Client) send a Transmission Request indicating that it wants to terminate a MCVideo On-demand Pre-arranged Group Call, Automatic Commencement Mode, with implicit Transmission Control?	-->	Transmission End Request	9	P
43	The SS (MCVideo Server) sends a Transmission End Response message to the UE (MCVideo Client) to verify that the UE (MCVideo Client) is able to end an MCVideo On-demand Pre-arranged Group Call, Automatic Commencement Mode, with implicit Transmission Control.	<--	Transmission End Response	-	-
44	Check: Does the UE (MCVideo Client) send a Transmit Control ACK message in response to the Transmission End Response message?	-->	Transmission Control ACK	2	P
45	The SS (MCVideo Server) sends a Transmission Idle message.	<--	Transmission Idle	-	-
46	Make the MCVideo User request to end the Group Call. (NOTE 1)	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
47	Check: Does the UE (MCVideo Client) send a SIP BYE message to end the On-demand Pre-arranged Group Call?	-->	SIP BYE	9	P
48	The SS (MCVideo Server) sends a SIP 200 (OK) message to the UE (MCVideo Client) to indicate acceptance to end the Group Call.	<--	SIP 200 (OK)	-	-
-	EXCEPTION: The SS waits 2 seconds before the SS releases the RRC connection. NOTE: The specified wait period of 2s shall ensure that lower layer signalling (TCP) is finished and any not allowed behaviour captured.	-	-	-	-

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

6.1.1.1.3.3 Specific message contents

Table 6.1.1.1.3.3-1: SIP INVITE (Step 2, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		SDP message		
MIME-part-headers				
Content-Type	"application/sdp"			
MIME-part-body	SDP Message as described in Table 6.1.1.1.3.3-1A			
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 6.1.1.1.3.3-2			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.1.1-2, conditions FIRST_SDP_FROM_UE, INITIAL_SDP_OFFER, IMPLICIT_GRANT_REQUESTED
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Table 6.1.1.1.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.1.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, conditions GROUP-CALL, INVITE_REFER
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Table 6.1.1.1.3.3-3: SIP 200 (OK) (Steps 4, 20, 36, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVIDEO-Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.1.3.3-3A			

Table 6.1.1.1.3.3-3A: SDP in SIP 200 (OK) (Table 6.1.1.1.3.3-4)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.1.2-2, conditions FIRST_SDP_FROM_SS, SDP_ANSWER, IMPLICIT_GRANT_REQUESTED

Table 6.1.1.1.3.3-4: Transmission Granted (Steps 6, 22, 38, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1, condition ON-NETWORK				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	"10000"	Server → client A '1' in the first bit indicates acknowledgement is required.	TS 24.581 [8] 8] 9.2.2.1-2	

Table 6.1.1.1.3.3-5: Transmission Control Ack (Steps 7, 15, 23, 31, 39, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	"00010000"	Transmission Control Ack message for Transmission Granted message which requested acknowledgment.		

Table 6.1.1.1.3.3-6: SIP re-INVITE (Step 10, Table 6.1.1.1.3.2.1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, EMERGENCY-CALL, re_INVITE, MOCALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-header				
MIME-part-body	As described in Table 6.1.1.1.3.3-7			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, EMERGENCY-CALL

Table 6.1.1.1.3.3-8: SIP 200 (OK) (Step 12, Table 6.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.1.3.3-7			

Table 6.1.1.1.3.3-9: Transmission Granted (Step 14, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1, condition ON-NETWORK				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	"10000"	Server → client A '1' in the first bit indicates acknowledgement is required.	TS 24.581 [8] 8] 9.2.2.1-2	
Transmission Indicator		Length is 16 bits, A-P.		
Transmission Indicator	"1001000000000000"	D = Emergency call	TS 24.581 [27], clause 9.2.5.1	

Table 6.1.1.1.3.3-10: SIP re-INVITE (Step 18, 34, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, re_INVITE, MOCALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo Info		
MIME-part-headers				
MIME-part-body	As described in Table 6.1.1.1.3.3-11			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL				
---	--	--	--	--

Table 6.1.1.1.3.3-12: SIP re-INVITE (Step 26, Table 6.1.1.1.3.2.1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, IMPERIL-CALL, re_INVITE, MOCALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo Info		
MIME-part-headers				
MIME-part-body	As described in Table 6.1.1.1.3.3-13			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, IMPERIL-CALL				
---	--	--	--	--

Table 6.1.1.1.3.3-14: SIP 200 (OK) (Step 28, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.1.3.3-13			

Table 6.1.1.1.3.3-15: Transmission Granted (Step 30, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1, condition ON-NETWORK				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	"10000"	Server → client A '1' in the first bit indicates acknowledgement is required.	TS 24.581 [8] 9.2.2.1-2	
Transmission Indicator		Length is 16 bits, A-P.		
Transmission Indicator	"0000100000000000"	A '1' in E position = Emergency call = Imminent peril call	TS 24.581 [27], clause 9.2.5.1	

Table 6.1.1.1.3.3-16: Transmission End Response (Step 43, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	"10001"	A '1' in the first bit indicates acknowledgement is required.	TS 24.581 [27], clause 9.2.2.1-2	

Table 6.1.1.1.3.3-17: Transmission Control Ack (Step 44, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	"00010001"	Transmission Control Ack message for Transmission End Response message which requested acknowledgment.		

Table 6.1.1.1.3.3-18: SIP BYE (Step 47, Table 6.1.1.1.3.2-1)

Derivation Path: 36.579-1 [2], Table 5.5.2.2.1-1, condition MO_CALL				
---	--	--	--	--

Table 6.1.1.1.3.3-19: SIP 200 (OK) (Step 48, Table 6.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

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

6.1.1.2.1 Test Purpose (TP)

(1)

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

(2)

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

(3)

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

(4)

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

(5)

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

(6)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a SIP re-INVITE from the SS (MCVideo Server) to upgrade the
ongoing MCVideo Group Call to a MCVideo Imminent Peril Group Call with Reception Control }
}
```



```

    then { the UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK)
response and considers the call as being upgraded to an Imminent Peril Group Call }
}

```

(7)

```

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

```

(8)

```

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

```

(9)

```

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

```

6.1.1.2.2 Conformance requirements

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

[TS 24.281, clause 6.2.3.1.1]

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

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

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

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

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

[TS 24.281, clause 6.2.3.1.2]

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

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

[TS 24.281, clause 9.2.1.2.1.2]

In the procedures in this subclause:

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

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

The MCVideo client:

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

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

- 3) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element; and

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

[TS 24.281, clause 9.2.1.2.1.4]

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

Upon receiving a request from an MCVidéo user to cancel the in-progress emergency condition on a prearranged MCVidéo group, the MCVidéo 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 MCVidéo client:

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

...

[TS 24.281, clause 9.2.1.2.1.6]

This subclause covers both on-demand session.

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

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

- b) shall set the MCVideo imminent peril group state to "MVG 1: no-imminent-peril"; and
- c) shall set the MCVideo imminent peril group call state to "MVG 1: imminent-peril-gc-capable";
- 5) shall check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;
- 10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and
- 11) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.581, Clause 6.3.4.3.6]

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

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

[TS 24.581, clause 6.3.4.4.12]

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

1. if counter Cx (Simultaneous transmission video) has not reached its upper limit:
 - a. shall perform the actions specified in the subclause 6.3.4.4.2;
2. if counter Cx (Simultaneous transmission video) has reached its upper limit:

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

[TS 24.581, clause 6.3.5.3.9]

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

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

[TS 24.581, clause 6.3.5.4.8]

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

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

6.1.1.2.3 Test description

6.1.1.2.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

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		
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A 'Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
1	The SS (MCVideo Server) sends a SIP INVITE message to an On-demand Pre-arranged group call with Automatic Commencement Mode to the UE (MCVideo Client).	<--	SIP INVITE	-	-
-	EXCEPTION: Step 2a1 describes behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter" identifies a step sequence that takes place if the UE (MCVideo Client) responds to a SIP INVITE message with a SIP 100 (Trying) message."	-	-	-	-
2a1	Check: Does the UE (MCVideo Client) responds with a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	1	P
3	Check: Does the UE (MCVideo Client) answer the call with a SIP 200 (OK)?	-->	SIP 200 (OK)	1	P
4	The SS (MCVideo Server) sends a SIP ACK message to the UE (MCVideo Client).	<--	SIP ACK	-	-
5	The SS (MCVideo Server) sends a Media Reception Notification message to the UE (MCVideo Client).	<--	Media Transmission Notification	-	-
5A	Check: Does the UE (MCVideo Client) provide media transmission notification to the MCVideo User? (NOTE 1)			2	P
6	Make the MCVideo User request permission to receive media. (NOTE 1)	-	-	-	-
7	Check: Does the UE (MCVideo Client) send a Receive Media Request message to the SS (MCVideo Server)?	-->	Receive Media Request	3	P
8	The SS (MCVideo Server) sends a Receive Media Response message to the UE (MCVideo Client).	<--	Receive Media Response	-	-
9	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? (NOTE 1)	-	-	3	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
10	The SS (MCVideo Server) sends a SIP re-INVITE message to the UE (MCVideoClient) to upgrade the On-demand Pre-arranged Group Call to a MCVideo Emergency Group Call.	<--	SIP re-INVITE	-	-
-	EXCEPTION: Step 11a1 describes behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter" identifies a step sequence that takes place if the UE (MCVideo Client) responds to a SIP INVITE message with a SIP 100 (Trying) message."	-	-	-	-
11a1	The UE (MCVideo Client) responds with a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	-	-
12	Check: Does the UE (MCVideo Client) respond to the SIP re-INVITE to upgrade to an Emergency state with a SIP 200 (OK)?	-->	SIP 200 (OK)	4	P
13	The SS (MCVideo Server) sends a SIP ACK to the UE (MCVideo Client).	<--	SIP ACK	-	-
14	The SS (MCVideo Server) sends a Media Transmission Notification message to the UE (MCVideo Client).	<--	Media Transmission Notification	-	-
14A	Check: Does the UE (MCVideo Client) provide receive media transmission notification to the MCVideo User? (NOTE 1)			2	P
15	Make the MCVideo User request permission to receive media (NOTE 1)	-	-	-	-
16	Check: Does the UE (MCVideo Client) send a Receive Media Request?	-->	Receive Media Request	3	P
17	The SS (MCVideo Server) sends a Receive Media Response message to the UE (MCVideo Client).	<--	Receive Media Response	-	-
18	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? (NOTE 1)	-	-	3	P
19	The SS (MCVideo Server) sends a SIP re-INVITE message to the UE to cancel the Emergency state.	<--	SIP re-INVITE	-	-
-	EXCEPTION: Step 20a1 describes behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter" identifies a step sequence that takes place if the UE (MCVideo Client) responds to a SIP INVITE message with a SIP 100 (Trying) message."	-	-	-	-
20a1	The UE (MCVideo Client) responds with a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	-	-
21	Check: Does the UE (MCVideo Client) respond to the Emergency state cancel with a SIP 200 (OK)?	-->	SIP 200 (OK)	5	P
22	The SS (MCVideo Server) sends a SIP ACK to the UE (MCVideo Client).	<--	SIP ACK	-	-
23	The SS (MCVideo Server) sends a Media Transmission Notification message to the UE (MCVideo Client).	<--	Media Transmission Notification	-	-
23A	Check: Does the UE (MCVideo Client) provide receive media transmission notification to the MCVideo User? (NOTE 1)			2	P
24	Make the MCVideo User request permission to receive media. (NOTE 1)	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
25	Check: Does the UE (MCVideo Client) respond with a Receive Media Request?	-->	Receive Media Request	3	P
26	The SS (MCVideo Server) sends a Receive Media Response message to the UE (MCVideo Client).	<--	Receive Media Response	-	-
27	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? (NOTE 1)	-	-	2	P
28	The SS (MCVideo Server) sends a SIP re-INVITE message to the UE (MCVideo Server) to upgrade the On-demand Pre-arranged Group Call to a MCVideo Imminent Peril Group Call.	<--	SIP re-INVITE	-	-
-	EXCEPTION: Step 29a1 describes behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter identifies a step sequence that takes place if the UE (MCVideo Client) responds to a SIP INVITE message with a SIP 100 (Trying) message."	-	-	-	-
29a1	Check: Does the UE (MCVideo Client) respond with a SIP 100 (Trying) message?	-->	SIP 100 (Trying)	5	P
30	Check: Does the UE (MCVideo Client) respond to the SIP re-INVITE, to upgrade to an Imminent Peril call, with a SIP 200 (OK)?	-->	SIP 200 (OK)	6	P
31	The SS (MCVideo Server) sends a SIP ACK to the UE (MCVideo Client).	<--	SIP ACK	-	-
32	The SS (MCVideo Server) sends a Media Transmission Notification message to the UE (MCVideo Client).	<--	Media Transmission Notification	-	-
33	Make the MCVideo User request permission to receive media. (NOTE 1)	-	-	-	-
34	Check: Does the UE (MCVideo client) respond with a Receive Media Request message?	-->	Receive Media Request	2	P
35	The SS (MCVideo Server) sends a Receive Media Response message to the UE (MCVideo Client).	<--	Receive Media Response	-	-
36	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? (NOTE 1)	-	-	3	P
37	The SS (MCVideo Server) sends a SIP re-INVITE message to the UE (MCVideo Client) to cancel the Imminent Peril state.	<--	SIP re-INVITE	-	-
-	EXCEPTION: Step 38a1 describes behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter identifies a step sequence that takes place if the UE (MCVideo Client) responds to a SIP re-INVITE message with a SIP 100 (Trying) message."	-	-	-	-
38a1	The UE (MCVideo Client) responds with a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	-	-
39	Check: Does the UE (MCVideo Client) respond to the Imminent Peril state cancellation with a SIP 200 (OK) message?	-->	SIP 200 (OK)	7	P
40	SS (MCVideo Server) sends a SIP ACK message to the UE (MCVideo Client).	<--	SIP ACK	-	-
41	The SS (MCVideo Server) sends a Media Transmission Notification message from the UE (MCVideo Client) to indicate that a media reception cancelling the Imminent Peril state	<--	Media Transmission Notification	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	has been initiated to a user.				
41A	Check: Does the UE (MCVideo Client) provide receive media transmission notification to the MCVideo User? (NOTE 1)			2	P
42	Make the MCVideo User request permission to receive media. (NOTE 1)	-	-	-	-
43	Check: Does the UE (MCVideo Client) respond with a Receive Media Request?	-->	Receive Media Request	3	P
44	The UE (MCVideo Client) receives a Receive Media Response message from the SS (MCVideo Server).	<--	Receive Media Response	-	-
45	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? (NOTE 1) 1	-	-	3	P
46	Make the MCVideo User request to end the RTP media reception. (NOTE 1)	-	-	-	-
47	Check: Does the UE (MCVideo Client) send a Media Reception End Request to indicate it wants to stop RTP packet media?	-->	Media Reception End Request	8	P
48	The SS (MCVideo Server) sends a Receive Media Reception End Response message to the UE (MCVideo Client).	<--	Media Reception End Response	-	-
49	The SS (MCVideo Server) sends a Transmission Idle message.	<--	Transmission Idle	-	-
50	The SS (MCVideo Server) sends a SIP BYE message.	<--	SIP BYE	-	-
51	Check: Does the UE (MCVideo Client) send a SIP 200 (OK) message in response to the SIP BYE message?	-->	SIP 200 (OK)	9	P
-	EXCEPTION: The SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-

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

6.1.1.2.3.3 Specific message contents

Table 6.1.1.2.3.3-1: SIP INVITE (Step 1, Table 6.1.1.2.3.2-1)

Derivation Path: TS 36-579-1 [2], Table 5.5.2.5.2-1, condition MCVIDEO				
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 6.1.1.2.3.3-2			

Table 6.1.1.2.3.3-2: MCVideo-INFO in SIP INVITE (Table 6.1.1.2.3.3-1)

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.2-2, condition GROUP CALL

Table 6.1.1.2.3.3-3: SIP 200 (OK) (Steps 3, 21, 39, Table 6.1.1.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, conditions INVITE-RSP, MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as			

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, conditions INVITE-RSP, MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
	described in Table 6.1.1.2.3.3-2			

Table 6.1.1.2.3.3-3A: SIP re-INVITE (Step 10, Table 6.1.1.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.2-1, conditions MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body		MCVideo-Info		
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MCVideo-Info	As described in Table 6.1.1.2.3.3-5			

Table 6.1.1.2.3.3-4A: SIP 200 (OK) (Step 12, Table 6.1.1.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, conditions INVITE-RSP, MCVIDEO, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.2.3.3-5			

Table 6.1.1.2.3.3-4: MCVideo-INFO in SIP re-INVITE (Table 6.1.1.2.3.3-4)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, conditions GROUP CALL, EMERGENCY-CALL				
--	--	--	--	--

Table 6.1.1.2.3.3-5: Void

Table 6.1.1.2.3.3-6: Void

Table 6.1.1.2.3.3-7: Void

Table 6.1.1.2.3.3-8: Void

Table 6.1.1.2.3.3-9: Void

Table 6.1.1.2.3.3-10: Receive Media Response (Step 17, Table 6.1.1.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	"0001000000000000"	D = Emergency call		

Table 6.1.1.2.3.3-11: SIP re-INVITE (Steps 19, 37, Table 6.1.1.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body		MCVideo-Info		
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MCVideo-Info	As described in Table 6.1.1.2.3.3-9			

Table 6.1.1.2.3.3-12: SIP re-INVITE (Step 28, Table 6.1.1.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.2-1, conditions MCVIDEO, IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body		MCVideo-Info		
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MCVideo-Info	As described in Table 6.1.1.2.3.3-11			

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

Derivation Path: TS 36.579-1, Table 5.5.3.2.2-2, conditions GROUP-CALL, IMPERIL-CALL				
--	--	--	--	--

Table 6.1.1.2.3.3-14: SIP 200 (OK) (Step 30, Table 6.1.1.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP, MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.2.3.3-11			

Table 6.1.1.2.3.3-15: Void**Table 6.1.1.2.3.3-16: Receive Media Response (Step 35, Table 6.1.1.2.3.2-1)**

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	"0000100000000000"	E = Imminent peril call		

Table 6.1.1.2.3.3-17: Void**Table 6.1.1.1.3.3-18: Void****Table 6.1.1.2.3.3-19: SIP BYE (Step 50, Table 6.1.1.2.3.2-1)**

Derivation Path: 36.579-1 [2], Table 5.5.2.2.2-1, condition MO_CALL				
---	--	--	--	--

Table 6.1.1.2.3.3-20: SIP 200 (OK) (Step 51, Table 6.1.1.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

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

6.1.1.3.1 Test Purpose (TP)

(1)

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

(2)

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

(3)

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

6.1.1.3.2 Conformance requirements

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

[TS 24.281, clause 9.2.1.2.1.1]

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

The MCVideo client:

...

- 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;

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

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

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

...

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

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

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

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

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

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

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

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

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

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

[TS 24.281, clause 6.2.1]

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

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

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

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

- 2) shall include an "m=audio" media-level section for the MCVideo media stream consisting of:
 - a) the port number for the media stream selected; and
 - b) the codec(s) and media parameters and attributes with the following clarification:
 - i) if the MCVideo client is initiating a call to a group identity;
 - ii) if the <preferred-voice-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and
 - iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;then the MCVideo client:
 - i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2]; and
 - c) "i=" field set to "audio component of MCVideo" according to 3GPP TS 24.229 [11];
- 3) shall include an "m=video" media-level section for the MCVideo media stream consisting of:
 - a) the port number for the media stream selected; and
 - b) the codec(s) and media parameters and attributes with the following clarification:
 - i) if the MCVideo client is initiating a call to a group identity;
 - ii) if the <preferred-video-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and
 - iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;then the MCVideo client:
 - i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2]; and
 - c) "i=" field set to "video component of MCVideo" according to 3GPP TS 24.229 [11];
- 4) if transmission control shall be used during the session, shall include an "m=application" media-level section as specified in 3GPP TS 24.581 [5] clause 12 for a media-transmission control entity, consisting of:
 - a) the port number for the media-transmission control entity selected as specified in 3GPP TS 24.581 [5]; and
 - b) the 'fmp' attributes as specified in 3GPP TS 24.581 [5] clause 14; and
- 5) if end-to-end security is required for a private call and the SDP offer is not for establishing a pre-established session, shall include the MIKEY-SAKKE I_MESSAGE in an "a=key-mgmt" attribute as a "mikey" attribute value in the SDP offer as specified in IETF RFC 4567 [34].

[TS 24.281, clause 6.4]

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

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

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

[TS 24.581, clause 6.2.1]

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

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

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

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

[TS 24.581, clause 6.2.2]

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

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

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

[TS 24.581, clause 12.1.2.1]

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

[TS 24.581, clause 12.1.2.2]

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

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

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

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

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

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

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

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

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

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

[TS 24.581, clause 14.2.1]

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

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

[TS 24.581, clause 14.2.4]

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

[TS 24.581, clause 14.2.5]

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

6.1.1.3.3 Test description

6.1.1.3.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)

IUT:

- UE (MCVideo Client)
 - The test USIM (Universal Subscriber Identity Module - SIM Card - should apply to Video) set as defined in subclause 5.5.10 is inserted.
 - The UE shall be switched off.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A (Procedure shown under IUT above).
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

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 MCVideo User request the establishment of a MCVideo On-demandPre-arranged Group Call, Manual Commencement Mode, with explicit request for Transmission control (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 56.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo Client) send an initial SIP INVITE to request the establishment of a MCVideo On-demand Pre-arranged Group Call with Manual Commencement?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) sends a SIP 100 Trying message.	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo Server) sends a SIP 200 (OK) message indicating that the MCVideo call has been established.	<--	SIP 200 (OK)	-	-
5	Check: Does the UE (MCVideo client) send a SIP ACK in response to the SIP 200 (OK)?	-->	SIP ACK	2-	P
6	The SS (MCVideo Server) sends a Transmission Granted message to the UE (MCVideo Client).	<--	Transmission Granted	-	-
7	Check: Does the UE (MCVideo Client) send an acknowledgement to the SS (MCVideo Server) in response to Transmission Granted?	-->	Transmission Control ACK	2	P
8	Check: Does the UE (MCVideo Client) provide transmission granted notification to the MCVideo User? (NOTE 1)	-	-	2	P
9	Make the MCVideo User request to end Transmission.	-	-	-	-

	(NOTE1)				
10	Check: Does the UE (MCVideo Client) send a Transmission End Request?	-->	Transmission End Request	2	P
11	The SS (MCVideo Server) responds to the UE (MCVideo Client) request.	<--	Transmission End Response	-	-
12	Check: Does the UE (MCVideo Client) acknowledge the response from the SS (MCVideo Server)?	-->	Transmission Control ACK	2	P
13	Void	-	-	-	-
14	Void	-	-	-	-
15	Check: Does the UE (MCVideo Client) send a SIP BYE message to end the On-demand Group Call?	-->	SIP BYE	3	P
16	The SS (MCVideo Server) sends a SIP 200 (OK).	<--	SIP 200 (OK)	-	-
-	EXCEPTION: The SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-

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

6.1.1.3.3.3 Specific message contents

Table 6.1.1.3.3.3-1: SIP INVITE (Step 2, Table 6.1.1.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Answer-Mode				
answer-mode-value	"Manual"			
Message-body				
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 6.1.1.3.3.3-2			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition GROUP CALL

Table 6.1.1.3.3.3-3: SIP 200 (OK) (Step 4, Table 6.1.1.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVIDEO-Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.3.3.3-4			

Table 6.1.1.3.3.3-4: Void

Table 6.1.1.3.3.3-5: Transmission Granted (Step 6, Table 6.1.1.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1, condition ON-NETWORK				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator		Length is 16 bits, A-P.		
Transmission Indicator	'1000000000000001' Is this value correct	A = normal cal. A '1' in the last bit requires an acknowledgement.		

Table 6.1.1.3.3.3-6: Transmission Control Ack (Step 7, 12, Table 6.1.1.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	'10000'	Transmission Control Ack message for Transmission Granted message which requested acknowledgment.		

Table 6.1.1.3.3.3-7: Transmission End Response (Step 11, Table 6.1.1.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	'10001'	A '1' in the last bit = acknowledgement required.		

Table 6.1.1.1.3.3-8: Void**Table 6.1.1.3.3.3-9: SIP BYE (Step 15, Table 6.1.1.3.3.2-1)**

Derivation Path: 36.579-1 [2], Table 5.5.2.2.1-1, condition MOCALL				
--	--	--	--	--

Table 6.1.1.3.3.3-10: SIP 200 (OK) (Step 16, Table 6.1.1.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.1.1.4 On-network / On-demand Pre-arranged Group Call / Manual Commencement Mode / Client Terminated (CT)

6.1.1.4.1 Test Purpose (TP)

(1)

```

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

```

(2)

```

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

```

(3)

```

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

```

(4)

```

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

```

6.1.1.4.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in: TS 24.281, clauses 9.2.1.2.1.2, 6.2.3.2.2, 9.2.1.2.3.3, 6.2.6, and in TS24.581, clause 6.2.5.2.2, 6.2.5.3.2, 6.2.5.3.3. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.2]

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

The MCVideo client:

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

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

...

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

...

- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.2 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is to use manual commencement mode; or

- b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; and
- 9) when the SIP 200 (OK) response to the SIP INVITE request is sent, may subscribe to the conference event package as specified in subclause 9.1.3.1.

[TS 24.281, clause 6.2.3.2.2]

When performing the manual commencement mode procedures:

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

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

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

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

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

[TS 24.281, clause 9.2.1.2.3.3]

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

[TS 24.281, clause 6.2.6]

Upon receiving a SIP BYE request, the MCVideo client:

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

[TS 24.581, clause 6.2.5.2.2]

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

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

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

[TS 24.581, clause 6.2.5.3.2]

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

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:

- a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
 3. shall store the User ID and the SSRC of the user transmitting the media;
 4. may display the details of the incoming media to the user; and
 5. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

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

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

6.1.1.4.3 Test description

6.1.1.4.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCPTT operation in the MCPTT configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.

- The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

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		
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A 'Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVIDEO relevant messages exchanged.	-	-	-	-
1	SS (MCVideo Server) initiates an on-demand pre-arranged group call with manual commencement mode and implicit Transmission Control.	<--	SIP INVITE	-	-
-	EXCEPTION: Steps 2a1 through 2a4 describe behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter" identifies a step sequence that take place if the UE (MCVideo Client) responds to a SIP INVITE prior to the MCVIDEO user's acknowledgment.	-	-	-	-
2a1	Check: Does the UE (MCVideo Client) respond with a SIP 100 Trying provisional response?	-->	SIP 100 (Trying)	1	P
2a2	Check: Does the UE (MCVideo Client) respond with a SIP 183 (Session Progress) message?	-->	SIP 183 (Session Progress)	1	P
2a3	The SS (MCVideo Server) responds to the SIP 183 (Session Progress) message with a SIP PRACK message.	<--	SIP PRACK	-	-
2a4	Check: Does the UE (MCVideo Client) acknowledge the SIP PRACK message with SIP 200 (OK) message.	-->	SIP 200 (OK)	1	P
3	Make the MCVideo User answer the call. (NOTE 1)	-	-	-	-
4	Check: Does the UE (MCVideo Client) answer the call with a SIP 200 (OK) message?	-->	SIP 200 (OK)	1	P
5	The SS (MCVideo Server) acknowledges the receipt of a SIP 200 (OK) for SIP INVITE message.	<--	SIP ACK	-	-
6	The SS (MCVideo Server) sends a Media Transmission Notification message	<--	Media Transmission Notification	-	-
7	Check: Does the UE (MCVideo Client) provide media transmission notification to the MCVideo User? (NOTE 1)	-	-	2	P
8	Make the MCVideo User request permission to receive media. (NOTE 1)	-	-	-	-
9	Check: Does the UE (MCVideo Client) send a Receive Media Request message?	-->	Receive Media Request	3	P
10	The SS (MCVideo Server) sends a Receive Media Response message.	<--	Receive Media Response	-	-
11	The SS ends the call by sending a SIP BYE message	<--	SIP BYE	-	-
12	Check: Does the UE (MCVideo Client) respond with a SIP 200 (OK) message?	-->	SIP 200 (OK)	4	P
-	EXCEPTION: SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
NOTE 1: This is expected to be done via a suitable implementation dependent MMI command.					

6.1.1.4.3.3 Specific message contents

Table 6.1.1.4.3.3-1: SIP INVITE from the SS (Step 1, Table 6.1.1.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5-1, conditions MCVIDEO, MANUAL				
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 6.1.1.4.3.3-2			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL

Table 6.1.1.4.3.3-3: Void**Table 6.1.1.4.3.3-4: SIP 200 (OK) (Steps 2a4, 12, Table 6.1.1.4.3.2-1)**

Derivation Path: 36.579-1 [2], Table 5.5.2.17.1.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

Table 6.1.1.4.3.3-5: SIP 200 (OK) (Step 4, Table 6.1.1.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, conditions MCVIDEO, INVITE-RSP				
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 6.1.1.4.3.3-6			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL

Table 6.1.1.4.3.6-7: SIP BYE (Step 11, Table 6.1.1.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.2.2-1, condition MOCALL

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

6.1.1.5.1 Test Purpose (TP)

(1)

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

(2)

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

(3)

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

6.1.1.5.2 Conformance requirements

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

[TS 24.281, clause 9.2.1.2.1.1]

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

The MCVideo client:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[TS 24.281, clause 6.2.8.1.1]

This subclause is referenced from other procedures.

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

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

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

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

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

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

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

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

[TS 24.281, clause 6.2.8.1.2]

This subclause is referenced from other procedures.

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

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

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

[TS 24.281, clause 6.2.8.1.3]

This subclause is referenced from other procedures.

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

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

the MCVideo client:

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

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

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

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

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

[TS 24.281, clause 6.2.8.1.4]

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

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

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

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

[TS 24.281, clause 6.2.1]

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

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

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

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

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

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

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

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

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

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

then the MCVideo client:

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

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

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

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

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

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

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

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

then the MCVideo client:

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

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

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

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

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

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

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

[TS 24.581, clause 6.2.4.4.6]

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

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

6.1.1.5.3 Test description

6.1.1.5.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.1.5.3.2 Test procedure sequence

Table 6.1.1.5.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the MCVideo User request the establishment of a MCVideo On-demand Pre-arranged Emergency Group Call for the selected MCVideo Emergency Group A, with explicit Transmission Control. (NOTE 1).	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo client) send an initial SIP INVITE request for the establishment of an MCVideo On-demand pre-arranged Emergency Group Call?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) sends a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
4	The SS sends SIP 200 (OK), indicating that the MCVideo call has been established.	<--	SIP 200 (OK)	-	-
5	Does the UE (MCVideo client) send a SIP ACK in response to the SIP 200 (OK)?	-->	SIP ACK	2	P
6	The SS (MCVideo Server) sends a Transmission Granted message.	<--	Transmission Granted	-	-
7	Check: Does the UE (MCVideo client) send a Transmission Control Ack message in response to the SS Transmission Granted message?	-->	Transmission Control Ack	2	P
8	Check: Does the UE (MCVideo Client) provide transmission granted notification to the MCVideo User? (NOTE 1)	-	-	1	P
9	Make the UE (MCVideo client) end the Group Call. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo Client) send a Transmission End Request message indicating that it wants to terminate a MCVideo On-Demand Pre-Arranged Emergency Group Call, with implicit Transmission Control?	-->	Transmission End Request	3	P
11	The SS (MCVideo Server) responds with a Transmission End Response message verifying that the UE (MCVideo Client) is able to end an MCVideo On-Demand Pre-Arranged Emergency Group Call, with implicit Transmission Control.	<--	Transmission End Response	-	-
12	Check: Does the UE (MCVideo Client) send a Transmit Control ACK message?	-->	Transmission Control ACK	3	P
13	The SS (MCVideo Server) sends a Transmission Idle message. Do I need this message? No difference whether ending an emergency call or normal call?	<--	Transmission Idle	-	-
14	Check: Does the UE (MCVideo Client) send a SIP BYE message to end the On-demand Pre-arranged Emergency Group Call?	-->	SIP BYE	3	P
15	The SS (MCVideo Server) responds to the SIP BYE message with a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: SS (MCVideo Server) releases the E-UTRA connection.	-	-		
NOTE 1: This action is expected to be done via a suitable implementation-dependent MMI.					

6.1.1.5.3.3 Specific message contents

Table 6.1.1.5.3.3-1: SIP INVITE (Step 2, Table 6.1.1.5.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, EMERGENCY-CALL				
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 6.1.1.5.3.3-2			

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

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, EMERGENCY-CALL

Table 6.1.1.5.3.3-3: SIP 200 (OK) (Step 4, Table 6.1.1.5.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, INVITE-RSP, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVIDEO-Info		
MIME-part-body	MCVideo-Info as described in Table 6.1.1.5.3.3-2			

Table 6.1.1.5.3.3-4: Transmission Granted (Steps 6, Table 6.1.1.5.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1, condition ON-NETWORK
--

Table 6.1.1.5.3.3-5: Transmission End Response (Step 11, Table 6.1.1.5.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	"10001"	A '1' in the first bit requires an acknowledgement.	TS 24.581 [27], clause 9.2.2.1-2	

Table 6.1.1.5.3.3-6: Transmission Control Ack (Step 12, Table 6.1.1.5.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	"10000"	Transmission Control Ack message for Transmission End Response message which requested acknowledgement.		

Table 6.1.1.5.3.3-7: SIP BYE (Step 14, Table 6.1.1.1.3.2-1)

Derivation Path: 36.579-1 [2], Table 5.5.2.2.1-1, condition MOCALL
--

Table 6.1.1.5.3.3-8: SIP 200 (OK) (Step 15, Table 6.1.1.5.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.1.1.6 On-network / On-demand Pre-arranged Group Call / Emergency Group Call / Client Terminated (CT)

6.1.1.6.1 Test Purpose (TP)

(1)

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

(2)

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

(3)

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

(4)

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

(5)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Automatic
  Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a SIP BYE message }
}
```

```
then { the UE (MCVideo Client) sends a SIP 200 (OK) message and leaves the MCVideo session }  
}
```

6.1.1.6.2 Conformance requirements

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

[TS 24.281, clause 9.2.1.2.1.2]

In the procedures in this subclause:

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

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

The MCVideo client:

- 1) may reject the SIP INVITE request if either of the following conditions are met:
 - a) MCVideo client does not have enough resources to handle the call; or
 - b) any other reason outside the scope of this specification;
 - 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [51] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorized to restrict the reason for failure and skip the rest of the steps of this subclause;
- NOTE: If the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.
- 3) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
 - 4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element; and
 - iii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - b) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - c) shall set the MCVideo imminent peril group state to "MVI 1: no-imminent-peril"; and
 - d) shall set the MCVideo imminent peril group call state to "MVIC 1: imminent-peril-gc-capable"; otherwise

5) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":

a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo imminent peril group call and:

i) should display the MCVideo ID of the originator of the MCVideo imminent peril group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

ii) should display the MCVideo group identity of the group with the imminent peril condition contained in the <mcvideo-calling-group-id> element; and

b) shall set the MCVideo imminent peril group state to "MVIIG 2: in-progress";

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

7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.2 if one of the following conditions are met:

a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode; or

b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client allows the call to be answered with automatic commencement mode;

8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.2 if one of the following conditions are met:

a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is to use manual commencement mode; or

b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; and

9) when the SIP 200 (OK) response to the SIP INVITE request is sent, may subscribe to the conference event package as specified in subclause 9.1.3.19.2.1.2.1.6 MCVideo client receives SIP re-INVITE request

This subclause covers both on-demand session.

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

1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":

a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo emergency group call and an indication that this is an MCVideo emergency group call;

b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;

c) shall set the MCVideo emergency group state to "MVEG 2: in-progress";

d) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and

e) shall set the MCVideo imminent peril group call state to "MVIIGC 1: imminent-peril-gc-capable";

2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":

a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call; and

- b) shall set the MCVideo imminent peril group state to "MIG 2: in-progress";
- 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":
- a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo emergency group call;
- b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "false":
- i) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and the MCVideo ID of the MCVideo user cancelling the MCVideo emergency alert; and
- ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:
- A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and
- B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user shall set the MCVideo emergency alert state to "MVEA 1: no-alert";
- c) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and
- d) if the MCVideo emergency group call state of the group is set to "MVEGC 3: emergency-call-granted", shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable";
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false":
- a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call;
- b) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
- c) shall set the MCVideo imminent peril group call state to "MVIIGC 1: imminent-peril-gc-capable";
- 5) shall check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;
- 10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and
- 11) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 6.2.3.1.2]

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

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

[TS 24.281, clause 6.2.6]

Upon receiving a SIP BYE request, the MCVideo client:

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

6.1.1.6.3 Test description

6.1.1.6.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo Client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideoUE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.1.6.3.2 Test procedure sequence

Table 6.1.1.6.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A 'Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
1	The SS (MCVideo Server) sends a SIP INVITE to initiate an on-demand pre-arranged emergency group call with automatic commencement mode.	<--	SIP INVITE	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 2a1 describes behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter" identifies a step sequence that take place if the UE (MCVideo Client) responds to a SIP INVITE message with a SIP 100 (Trying) message.	-	-	-	-
2a1	Check: Does the UE (MCVideo Client) respond with a SIP 100 (Trying) message?	-->	SIP 100 (Trying)	1	P
3	Check: Does the UE (MCVideo Client) send a SIP 200 (OK) message?	-->	SIP 200 (OK)	1	P
4	The SS (MCVideo Server) sends an acknowledgement of the SIP 200 (OK) message.	<--	SIP ACK		
5	Check: Does the UE (MCVideo Client) display an indication for the Pre-arranged MCVideo emergency group call to the MCVideo User? (NOTE 1)	-	-	1	P
6	The SS (MCVideo Server) sends a Media Transmission Notification message.	<--	Media Transmission Notification	-	-
7	Check: Does the UE (MCVideo Client) provide media transmission notification to the MCVideo User? (NOTE 1).	-	-	2	P
8	Make the MCVideo User request permission to receive media. (NOTE 1)	-	-	-	-
9	Check: Does the UE (MCVideo Client) respond with a Media Receive Request message?	-->	Receive Media Request	2	P
10	The SS (MCVideo Server) sends a Receive Media Response message.	<--	Receive Media Response	-	-
11	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? (NOTE 1)	-	-	3	P
12	Make the MCVideo User request to end the RTP media reception. (NOTE1)	-	-	-	-
13	Check: Does the UE (MCVideo Client) request to terminate the RTP media reception by sending a Media Reception End Request message?	-->	Media Reception End Request	4	P
14	The SS (MCVideo Server) responds with a Media Reception End Response message.	<--	Media Reception End Response	-	-
15	Void	-	-	-	-
16	The SS (MCVideo Server) sends a SIP BYE message to the UE (MCVideo Client) to terminate the session.	<--	SIP BYE		
17	Check: Does the UE (MCVideo Client) send a SIP 200 (OK) message to the SS (MCVideo Server)?	-->	SIP 200 (OK)	5	
-	EXCEPTION: SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-
NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.					

6.1.1.6.3.3 Specific message contents

Table 6.1.1.6.3.3-1: SIP INVITE (Step 1, Table 6.1.1.6.3.2-1)

Derivation Path: TS 36-579-1 [2], Table 5.5.2.5.2-1, conditions MCVIDEO, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-headers				
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MIME-part-body	MCVideo-Info as described in Table 6.1.1.6.3.3-2			

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

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL

Table 6.1.1.6.3.3-3: SIP 200 (OK) (Step 3, Table 6.1.1.6.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVIDEO-Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.6.3.3-4			

Table 6.1.1.6.3.3-4: MCVideo-Info (Table 6.1.1.6.3.3-3)

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL

Table 6.1.1.6.3.3-5: Receive Media Response (Step 10, Table 6.1.1.6.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.8-1, condition EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator	'0001000000000000'	D = Emergency Call		

Table 6.1.1.6.3.3-6: SIP BYE (Step 16 Table 6.1.1.6.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.2-1, condition MO-CALL
--

Table 6.1.1.6.3.3-7: SIP 200 (OK) (Step 17, Table 6.1.1.6.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

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

6.1.1.7.1 Test Purpose (TP)

(1)

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

(2)

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

(3)

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

6.1.1.7.2 Conformance requirements

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

[TS 24.281, clause 6.2.8.2]

NOTE: This subclause is referenced from other procedures.

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

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

[TS 24.281, clause 9.2.1.2.1.1]

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

The MCVideo client:

...

- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;
- 4) shall include the `g.3gpp.mcvideo` media feature tag and the `g.3gpp.icsi-ref` media feature tag with the value of `"urn:urn-7:3gpp-service.ims.icsi.mcvideo"` in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 5) shall include an Accept-Contact header field containing the `g.3gpp.mcvideo` media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 6) shall include the ICSI value `"urn:urn-7:3gpp-service.ims.icsi.mcvideo"` (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 7) shall include an Accept-Contact header field with the `g.3gpp.icsi-ref` media feature tag containing the value of `"urn:urn-7:3gpp-service.ims.icsi.mcvideo"` along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 8) should include the "timer" option tag in the Supported header field;
- 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
- 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

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

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

...

- 14) shall contain in an `application/vnd.3gpp.mcvideo-info+xml` MIME body with the `<mcvideoinfo>` element containing the `<mcvideo-Params>` element with:
 - a) the `<session-type>` element set to a value of "prearranged";
 - b) the `<mcvideo-request-uri>` element set to the group identity;
 - c) the `<mcvideo-client-id>` element set to the MCVideo client ID of the originating MCVideo client; and

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

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

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

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

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

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

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

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

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the 'Transmission participant state transition diagram for basic transmission control operation';
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or rejoining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is rejoining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;

3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

6.1.1.7.3 Test description

6.1.1.7.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.1.7.3.2 Test procedure sequence

Table 6.1.1.7.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the MCVideo User request the establishment of a MCVideo On-demand Pre-arranged Broadcast Group Call for the selected MCVideo Broadcast Group GROUP A, with implicit Transmission Control. (NOTE1)	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo client) send an initial SIP INVITE request for the establishment of a MCVideo On-demand Pre-arranged Broadcast Group Call?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) responds to the UE with a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo Server) sends a SIP 200 (OK) message to the UE (MCVideo Client), indicating that it has accepted the SIP INVITE request from the UE.	<--	SIP 200 (OK)	-	-
5	Check: Does the UE (MCVideo Client) respond with a SIP ACK message?	-->	SIP ACK	1	P
6	The SS (MCVideo Server) sends a Transmission Granted message to the UE (MCVideo Client).	<--	Transmission Granted	-	-
7	Check: Does the UE (MCVideo Client) send a Transmission Control ACK in response to Transmission Granted message from the SS (MCVideo Server)?	-->	Transmission Control ACK	2	P
8	Check: Does the UE (MCVideo Client) provide transmission granted notification to the MCVideo User? (NOTE 1)	-	-	2	P
9	Make the MCVideo User request to release transmission control. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo Client) send a Transmission End Request message indicating that it wants to terminate a MCVideo On-demand Pre-arranged Broadcast Group Call?	-->	Transmission End Request	3	P
11	The SS (MCVideo Server) responds with a Transmission end response message to the UE (MCVideo Client) to verify that the UE (MCVideo Client) is able to end a MCVideo On-demand Pre-arranged Broadcast Group Call.	<--	Transmission End Response	-	-
12	Check: Does the UE (MCVideo Client) notify the MCVideo User that the media transmission is completed? (NOTE 1)	-	-	3	P
13	Check: Does the UE (MCVideo Client) send a SIP BYE request to terminate the MCVideo session?	-->	SIP BYE	3	P
14	The SS (MCVideo Server) responds to the UE (MCVideo Client) with a SIP 200 (OK) message to indicate acceptance to end the Broadcast Group Call.	<--	SIP 200 (OK)	-	-
-	EXCEPTION: SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-
NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.					

6.1.1.7.3.3 Specific message contents

Table 6.1.1.7.3.3-1: SIP INVITE (Step 2, Table 6.1.1.7.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVIDEO-Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.7.3.3-2			

Table 6.1.1.7.3.3-2: MCVideo-INFO in SIP INVITE (Table 6.1.1.7.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
broadcast-ind	true			

Table 6.1.1.7.3.3-3: SIP 200 (OK) (Step 4, Table 6.1.1.7.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVIDEO-Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.7.3.3-2			

Table 6.1.1.7.3.3-4: Transmission Granted (Step 6, Table 6.1.1.7.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1, condition ON-NETWORK				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator		Length is 16 bits, A-P. A value of 1 in any one or more bits indicates type of condition as shown below.		
Transmission Indicator	"0100000000000001"	A value of 1 in any one or more bits indicates type of condition as follows: B = Broadcast group call A '1' in the last bit = acknowledgement is required.	TS 24.581 [27], clause 9.2.5.1	

Table 6.1.1.7.3.3-5: Transmission Control Ack (Step 7, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], 5.5.11.3.5-1, condition ON-NETWORK				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	"10000"	Transmission Control Ack message for Transmission Granted message that requested acknowledgment.		

Table 6.1.1.7.3.3-6: SIP BYE (Step 13, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.2-1, condition MO_CALL
--

Table 6.1.1.7.3.3-7: SIP 200 (OK) (Step 14, Table 6.1.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

6.1.1.8 On-network / On-demand Pre-arranged Group Call / Broadcast Group Call / Client Terminated (CT)

6.1.1.8.1 Test Purpose (TP)

(1)

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

(2)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Broadcast Group Call, with
implicit Reception Control }
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) and the MCVideo User requests permission to receive media }
    then {the UE (MCVideo Client) sends a Receive Media Request message to the SS (MCVideo Server)
and provides receive media success notification to the MCVideo User and provides a notification to
the MCVideo User indicating the type of call }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Broadcast Group Call, with
implicit Reception Control }
ensure that {
  when {the UE (MCVideo Client) receives a Media Reception End Request message }
    then {UE (MCVideo Client) responds with a Media Reception End Response message and informs the
MCVideo User that the receiving RTP media is being ended and provides a notification to the MCVideo
User indicating the type of call }
}
```

(4)

```
with { the UE (MCVideo Client) having received a Media Reception End Request message }
ensure that {
  when {the UE (MCVideo Client) receives a SIP BYE message }
    then { the UE (MCVideo Client) responds with a SIP 200 (OK) message and leaves the call }
}
```

6.1.1.8.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 9.2.1.2.1.2, 6.2.6, and 10.2.2.2.2; TS 24.581, clause 6.2.5.3.3, 6.2.5.3.4, 6.2.5.3.5, and 6.2.5.5.5. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.2]

In the procedures in this subclause:

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

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

The MCVideo client:

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

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

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

- b) shall set the MCVideo imminent peril group state to "MVIg 2: in-progress";
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.2 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client allows the call to be answered with automatic commencement mode;
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.2 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is to use manual commencement mode; or
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; and
- 9) when the SIP 200 (OK) response to the SIP INVITE request is sent, may subscribe to the conference event package as specified in subclause 9.1.3.1.

[TS 24.281, clause 6.2.6]

Upon receiving a SIP BYE request, the MCVideo client:

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

[TS 24.281, clause 10.2.2.2.2]

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

The MCVideo client:

- 1) may reject the SIP INVITE request if any of the following conditions are met:
 - a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];
 - b) MCVideo client does not have enough resources to handle the call; or
 - c) any other reason outside the scope of this specification;

otherwise, continue with the rest of the steps.

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

- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this subclause;
- 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":

- a) should display to the MCVidéo user an indication that this is a SIP INVITE request for an MCVidéo emergency private call and:
 - i) should display the MCVidéo ID of the originator of the MCVidéo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVidéo user an indication of the MCVidéo emergency alert and associated information; and
 - b) shall set the MCVidéo emergency private priority state to "MVEPP 2: in-progress" for this private call;
 - 4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVidéo ID of the originating MCVidéo client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVidéo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in subclause 4.4; and
 - e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];
- NOTE 2: With the PCK successfully shared between the originating MCVidéo client and the terminating MCVidéo client, both clients are able to use SRTP/SRTCIP to create an end-to-end secure session.
- 5) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
 - 6) may display to the MCVidéo user the MCVidéo ID of the inviting MCVidéo user;
 - 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.1 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVidéo service setting at the invited MCVidéo client for answering the call is set to automatic commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVidéo service setting at the invited MCVidéo client for answering the call is set to manual commencement mode, yet the invited MCVidéo client is willing to answer the call with automatic commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and
 - 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.1 if either of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVidéo service setting at the invited MCVidéo client for answering the call is set to manual commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVidéo service setting at the invited MCVidéo client for answering the call is set to automatic commencement mode, yet the invited MCVidéo client allows the call to be answered with manual commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Upon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVideo client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVideo client:

- 1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and
- 2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVideo client:

shall follow the procedures in subclause 10.2.5.2.

[TS 24.581, clause 6.2.5.3.3]

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

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

[TS 24.581, clause 6.2.5.3.4]

Upon receiving a Transmission end notify message, the transmission participant:

1. shall inform the user about the media transmission ended by another user; and
2. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.5]

Upon receiving an MCVideo call release step 1 request from the application and signalling plane when the MCVideo call is going to be released or when the transmission participant is leaving the MCVideo call, the transmission participant:

1. shall stop receiving reception control messages;
2. shall request the MCVideo client to stop receiving RTP media packets; and
3. shall enter the 'Call releasing' state.

[TS 24.581, clause 6.2.5.5.5]

Upon receiving a Media reception end request message, the transmission participant:

1. if the first bit in the subtype of the Media reception end request message set to "1" (Acknowledgment is required) as described in subclause 8.3.2, shall send a Reception control Ack message. The Reception control Ack message:
 - a. shall include the Message Type field set to '2' (Media reception end request);
 - b. shall include the Source field set to '0' (the transmission participant is the source); and
 - c. shall include the Message Name field set to MCV2.
2. shall inform the user that the receiving RTP media is being ended;

3. may give information to the user about the reason for ending the received RTP media;
4. shall request the MCVideo client to discard any remaining buffered RTP media packets and stop displaying to user;
5. shall send a Media reception end response message towards the transmission control server;
6. may provide a Media reception end notification to the MCVideo user;
7. if the Receive Media Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call; and
8. shall enter the 'terminated' state.

6.1.1.8.3 Test description

6.1.1.8.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.1.8.3.2 Test procedure sequence

Table 6.1.1.8.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A 'Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS (MCVideo Server) sends a SIP INVITE to the UE (MCVideo Client) to initiate an On-demand pre-arranged Broadcast Group Call, with explicit Reception Control by sending a SIP INVITE message.	<--	SIP INVITE	-	-
-	EXCEPTION: Step 2a1 describes behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter" identifies a step sequence that take place if the UE (MCVideo Client) responds to a SIP INVITE message with a SIP 100 (Trying) message.				
2a1	Check: Does the UE (MCVideo Client) respond with a SIP 100 (Trying) message?	-->	SIP 100 (Trying)	1	P
3	Check: Does the UE (MCVideo Client) send a SIP 200 (OK) message?	-->	SIP 200 (OK)	1	P
4	The SS (MCVideo Server) sends a SIP ACK message to the UE (MCVideo Client) to acknowledge the SIP 200 (OK) message.	<--	SIP ACK	-	-
5	The SS (MCVideo Server) notifies the UE (MCVideo Client) that there is a broadcast message waiting for him to receive.	<--	Media Transmission Notification	-	-
6	Make the MCVideo User request permission to receive media. (NOTE 1)	-	-	-	-
7	Check: Does the UE (MCVideo Client) request permission to receive the message?	-->	Receive Media Request	2	P
8	The SS (MCVideo Server) responds to the Receive Media Request message.	<--	Receive Media Response	-	-
9	Check: Does the UE (MCVideo client) provide receive media success notification to the MCVideo User and provide a notification to the MCVideo User indicating the type of call? (NOTE 1)	-	-	2	P
10	The SS (MCVideo Server) sends a Media Reception End Request message.	<--	Media Reception End Request	-	-
11	Check: Does the UE (MCVideo Client) respond with a Media Reception End Response message?	-->	Media Reception End Response	3	P
12	Check: Does the UE (MCVideo Client) inform the MCVideo User that the receiving RTP media is being ended and provide a notification to the MCVideo User indicating the type of call? (NOTE 1)	-	-	3	P
13	The SS (MCVideo Server) sends a SIP BYE message.	<--	SIP BYE	-	-
14	Check: Does the UE (MCVideo Client) send a SIP 200 (OK) message?	-->	SIP 200 (OK)	4	P
-	EXCEPTION: SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-
NOTE 1: This action is expected to be done via a suitable implementation dependent MMI.					

6.1.1.8.3.3 Specific message contents

Table 6.1.1.8.3.3-1: SIP INVITE (Step 1, Table 6.1.1.8.3.2-1)

Derivation Path: TS 36-579-1 [2], Table 5.5.2.5.2-1, conditions MCVIDEO, BROADCAST CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body			RFC 3261 [22]	
MIME body part		MCVideo Info		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.8.3.3-2			

Table 6.1.1.8.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.8.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.2-2, conditions GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
broadcast-ind	true			

Table 6.1.1.8.3.3-3: SIP 200 (OK) (Step 3, Table 6.1.1.8.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVIDEO-Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.8.3.3-4			

Table 6.1.1.8.3.3-4: MCVideo-Info in SIP INVITE (Table 6.1.1.8.3.3-3)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, conditions GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
broadcast-ind	true			

Table 6.1.1.8.3.3-5: Receive Media Request (Step 7, Table 6.1.1.8.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.1.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'0100000000000000'	B = Broadcast Call		

Table 6.1.1.8.3.3-6: Receive Media Response (Step 8, Table 6.1.1.8.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.9-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'0100000000000000'	B = Broadcast Call		

Table 6.1.1.8.3.3-7: Media Reception End Request (Step 10, Table 6.1.1.8.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator	'0100000000000000'	B = Broadcast Call		

Table 6.1.1.8.3.3-8: SIP BYE (Step 13 Table 6.1.1.8.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.2.2-1, condition MO_CALL				
Information Element	Value/remark	Comment	Reference	Condition

Table 6.1.1.8.3.3-9: SIP 200 (OK) (Step 14, Table 6.1.1.8.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, condition MO_CALL				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.1.1.9 On-network / On-demand Pre-arranged Group Call / Broadcast Group Call with Temporary Group / Client Originated (CO)

6.1.1.9.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of a MCVideo On-demand Pre-arranged Broadcast
Group Call with a Temporary Group }
  then { the UE (MCVideo Client) requests On-demand Pre-arranged Broadcast Group Call by sending a
SIP INVITE message and responds to a SIP 200 (OK) message with a SIP ACK message }
}
```

(2)

```
with { the UE (MCVideo Client) having an ongoing On-demand Pre-arranged Broadcast Group Call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Broadcast Group Call before the
Broadcast has been completed }
  then { the UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo Session }
}
```

6.1.1.9.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 9.2.1.2.1.1, 6.2.8.2, 6.2.4.1; also, TS 24.481, clause 6.3.14. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.1]

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

The MCVideo client:

...

- 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;

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

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

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

...

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

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

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

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

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

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

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

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

[TS 24.281, clause 6.2.8.2]

NOTE: This subclause is referenced from other procedures.

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

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

[TS 24.281, clause 6.2.4.1]

Upon receiving a request from an MCVideo user to leave an MCVideo session established using on-demand session signalling, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11];
- 3) shall set the Request-URI to the MCVideo session identity to leave; and
- 4) shall send a SIP BYE request towards MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request, the MCVideo client shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.481, clause 6.3.14]

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

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

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

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

6.1.1.9.3 Test description

6.1.1.9.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- The UE has affiliated to a MCVideo temporary group identity TGI, identifying a MCVideo temporary group B as a member of MCVideo broadcast group A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.1.9.3.2 Test procedure sequence

Table 6.1.1.9.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the MCVideo User request the establishment of a MCVideo On-demand Pre-arranged Broadcast Group call for the selected MCVideo temporary group GROUP B as a member of the MCVideo broadcast group GROUP A, with explicit Transmission Control. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 56.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo Client) send an initial SIP INVITE requesting the establishment of a MCVideo On-demand pre-arranged broadcast group call with temporary group?	-->	SIP INVITE	1	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
3	The SS (MCVideo Server) sends a SIP 100 (Trying) message	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo Server) sends SIP 200 (OK), indicating that the MCVideo call has been established.	<--	SIP 200 (OK)	-	-
5	Check: Does the UE (MCVideo Client) send a SIP ACK message in response to the SIP 200 (OK) message?	-->	SIP ACK	1	P
6	Make the MCVideo User request to terminate the Broadcast Group call. (NOTE 1)	-	-	-	-
7	Check: Does the UE (MCVideo Client) send a SIP BYE request to terminate the MCVideo Broadcast session before the broadcast has been completed?	-->	SIP BYE	2	P
8	The SS (MCVideo Server) sends a SIP 200 (OK) to the UE (MCVideo Client).	<--	SIP 200 (OK)	-	-
-	EXCEPTION: The SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-
NOTE 1: This is expected to be done via a suitable implementation dependent MMI command.					

6.1.1.9.3.3 Specific message contents

Table 6.1.1.9.3.3-1: SIP INVITE (Step 2, Table 6.1.1.9.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, conditions GROUP-CALL, MCVIDEO				
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 6.1.1.9.3.3-2			

Table 6.1.1.9.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.9.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
broadcast-ind	"True"			
mcvideo-request-uri	px_MCVideo_Group_B_ID			
associated-group-id	px_MCVideo_Group_A_ID			

Table 6.1.1.9.3.3-3: SIP 200 (OK) (Step 2, Table 6.1.1.9.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.17.1.2-1, conditions INVITE-RSP, MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.9.3.3-4			

Table 6.1.1.9.3.3-4: MCVideo-Info in SIP 200 (OK) (Table 6.1.1.9.3.3-3)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
broadcast-ind	"True"			
mcvideo-request-uri	px_MCVideo_Group_B_ID			

Table 6.1.1.9.3.3-5: SIP BYE (Step 7, Table 6.1.1.9.3.2-1)

Derivation Path: 36.579-1 [2], Table 5.5.2.2.1-1, condition MO_CALL				
---	--	--	--	--

Table 6.1.1.9.3.3-6: SIP 200 (OK) (Step 8, Table 6.1.1.9.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

6.1.1.10 On-network / On-demand Pre-arranged Group Call / Imminent Peril Group Call / Client Originated (CO)

6.1.1.10.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo On-demand Pre-arranged Imminent Peril Group Call }
  then { the UE (MCVideo Client) sends a SIP INVITE message to setup the Imminent Peril Group Call }
}
```

(2)

```
with { the UE (MCVideo Client) having established an MCVideo On-demand Pre-arranged Imminent Peril Group Call }
ensure that {
  when { the MCVideo User receives a Transmission Granted message }
  then { the UE (MCVideo Client) responds with a Transmission Control Ack message and provides Transmission granted notification to the MCVideo User and respects Transmission Control (Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission Control Response) }
}
```

(3)

```
with { the UE (MCVideo Client) having an ongoing MCVideo On-demand Pre-arranged Imminent Peril Group Call }
ensure that {
  when { the MCVideo User requests to release Transmission control }
  then { the UE (MCVideo Client) sends a Transmission End Request message and then responds to the Transmission End Response message with a Transmission Control ACK message }
}
```

(4)

```
with { the UE (MCVideo Client) having released Transmission control }
ensure that {
```

```

when { the MCVideo User requests to terminate the On-demand Pre-arranged Imminent Peril Group Call
}
  then { the UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo Session }
}

```

6.1.1.10.2 Conformance requirements

References: The conformance requirements covered in the current Test Cases are specified in TS 24.281, clauses 9.2.1.2.1.1 and 6.2.8.1.9; TS24.581 clauses 6.2.4.2.2, 6.2.4.4.6, 6.2.4.5.3, 6.2.4.6.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.1]

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

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo prearranged group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
 - 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
 - 3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.2;
 - 4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
 - 5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
 - 6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
 - 7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
 - 8) should include the "timer" option tag in the Supported header field;
 - 9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";
 - 10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;
- NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.
- 11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
 - 12) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2;

13) if the MCVideo client imminent peril group state for this group is set to "MVGIC 2: in-progress" or "MVGIC 4: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[TS 24.281, clause 6.2.8.1.9]

This subclause is referenced from other procedures.

When the MCVideo client receives a request from the MCVideo user to originate an MCVideo imminent peril group call, and this is an authorised request for an MCVideo imminent peril group call as determined by the procedures of subclause 6.2.8.1.8, the MCVideo client:

- 1) if the MCVideo client imminent peril group state is set to "MVIC 1: imminent-peril-capable" and the in-progress emergency state of the group is set to a value of "false":
 - a) shall include in the SIP request a MIME mcvideoinfo body as defined in Annex F.1 with the <imminentperil-ind> element set to "true" and set the MCVideo emergency group call state to "MVIC 2: imminent-peril-call-requested" state; and
 - b) if the MCVideo client imminent peril group state of the group is set to a value other than "MVIC 2: in-progress" shall set the MCVideo client emergency group state of the MCVideo group to "MVIC 3: confirm-pending".

NOTE: An MCVideo group call originated by an affiliated member of an MCVideo group which is in an in-progress imminent peril state (as tracked on the MCVideo client by the MCVideo client imminent peril group state) will also have the priority associated with MCVideo imminent peril group calls. The <imminentperil-ind> element of the MIME mcvideoinfo body does not need to be included in this case, nor do any state changes result and hence no action needs to be taken in this subclause.

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the 'Transmission participant state transition diagram for basic transmission control operation';
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or rejoining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is rejoining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.2.4.4.6]

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

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

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and
 - b. shall enter the 'Call releasing' state.

6.1.1.10.3 Test description

6.1.1.10.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.

- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.1.10.3.2 Test procedure sequence

Table 6.1.1.10.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the MCVideo User request the establishment of a MCVideo On-demand Pre-arranged Imminent Peril Group call for the selected MCVideo Imminent Peril Group g A, with implicit Transmission Control. (NOTE 1)	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo client) send an initial SIP INVITE message requesting the establishment of an MCVideo On-demand pre-arranged Imminent Peril Group Call with implicit Transmission Control?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) sends a SIP 100 (Trying) message	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo Server) sends SIP 200 (OK) message, indicating that the MCVideo call has been established.	<--	SIP 200 (OK)	-	-
5	Check: Does the UE (MCVideo client) send a SIP ACK message in response to the SIP 200 (OK) message?	-->	SIP ACK	1	P
6	The SS (MCVideo Server) sends a Transmission Granted message.	<--	Transmission Granted	-	-
7	Check: Does the UE (MCVideo Client) responds with a Transmission Control ACK message?	-->	Transmission Control ACK	2	P
8	Check: Does the UE (MCVideo Client) provide Transmission granted notification to the user? (NOTE 1).	-	-	2	P
9	Make the MCVideo User release Transmission Control. (NOTE 1)	-	-	-	-
10	Check: Does the UE (MCVideo Client) send a Transmission End Request message to leave the Group Call?	-->	Transmission End Request	3	P
11	The SS (MCVideo Server) responds to the Transmission End Request message.	<--	Transmission End Response	-	-
12	Check: Does the UE (MCVideo Client) acknowledge the SS (MCVideo Server) Response?	-->	Transmission Control ACK	3	P
13	Make the MCVideo User end the call. (NOTE 1)	-	-	-	-
14	Check: Does the UE (MCVideo Client) send a SIP BYE message?	-->	SIP BYE	4	P
15	The SS (MCVideo Server) sends a SIP 200 (OK)	<--	SIP 200 (OK)	-	-

	message.				
-	EXCEPTION: The SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-
Note 1: On-network / On-demand Pre-arranged Group Call / Imminent Peril Group Call / Client Originated (CO)					

6.1.1.10.3.3 Specific message contents

Table 6.1.1.10.3.3-1: SIP INVITE (Step 2, Table 6.1.1.10.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, conditions MCVIDEO, IMMIDENT PERIL				
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 6.1.1.10.3.3-2			

Table 6.1.1.10.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.1.10.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, conditions GROUP-CALL, IMMIDENT PERIL
--

Table 6.1.1.10.3.3-3: SIP 200 (OK) (Step 4, Table 6.1.1.10.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVIDEO-Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.10.3.3-4			

Table 6.1.1.10.3.3-4: MCVideo-Info in SIP INVITE (Table 6.1.1.10.3.3-3)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.2-2, conditions GROUP-CALL, IMMIDENT PERIL
--

Table 6.1.1.10.3.3-5: Transmission Granted (Step 6, Table 6.1.1.10.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	"0000100000000000"	bit E=1 (Imminent Peril).		

Table 6.1.1.10.3.3-6: Transmission End Response (Step 12, Table 6.1.1.10.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	"10001"	A '1' in the first bit = Acknowledgement		

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.2-1				
Information Element	Value/remark	Comment	Reference	Condition
		Required		

Table: 6.1.1.10.3.3-6A: Transmission Control Ack

Derivation Path: TS 24.581 [88] Table 9.2.31-1				
Information Element	Value/remark	Comment	Reference	Condition
Message type				
Message Type	"00010001"	value is an 8 bit binary value containing the binary value consisting of the 5 bit message subtype as coded in table 9.2.2.1-1, table 9.2.2.1-2 and table 9.2.2.1-3 (including the first bit (used by some transmission control messages to indicate that a Transmission control Ack message is requested) of the five bit subtype) preceded by "000".		

Table 6.1.1.10.3.3-7: SIP BYE (Step 14, Table 6.1.1.10.3.2-1)

Derivation Path: 36.579-1 [2], Table 5.5.2.2.1-1, condition MO_CALL				
---	--	--	--	--

Table 6.1.1.10 3.3-8: SIP 200 (OK) (Step 15, Table 6.1.1.10.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

6.1.1.11 On-network / On-demand Pre-arranged Group Call / Imminent Peril Group Call / Client Terminated (CT)

6.1.1.11.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorized for MCVideo Service }
ensure that {
  when { the MCVideo Client receives a SIP INVITE message of an MCVideo On-demand Pre-arranged
Imminent Peril Group Call and the MCVideo User answers the call }
  then { the MCVideo Client responds to the SS (MCVideo Server) with a SIP 200 (OK) message }
}
```

(2)

```
with { the UE (MCVideo Client) having an ongoing MCVideo Pre-arranged Imminent Peril Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) }
  then { the UE (MCVideo Client) provides media transmission notification to the MCVideo User and
sends a Receive Media Request message to the SS (MCVideo Server) }
```

(3)

```

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

```

(4)

```

with { the UE (MCVideo Client) having an ongoing MCVideo On-demand Pre-arranged Imminent Peril Group
Call }
ensure that {
  when { the MCVideo User requests to terminate the On-demand Pre-arranged Imminent Peril Group Call
}
  then { the UE (MCVideo Client) sends a SIP BYE message and leaves the MCVideo Session }
}

```

6.1.1.11.2 Conformance requirements

References: The conformance requirements covered in the current Test Case are specified in TS 24.281, clauses 9.2.1.2.1.2, TS 24.581 clauses 6.2.5.2.2, 6.2.5.3.2, 6.2.5.3.3, 6.2.5.4.5, 6.2.5.5.3, 6.2.5.6.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-15 requirements.

[TS 24.281, clause 9.2.1.2.1.2]

In the procedures in this subclause:

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

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

The MCVideo client:

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

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

- 3) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:

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

[TS 24.581, clause 6.2.5.2.2]

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

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

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

[TS 24.581, clause 6.2.5.3.2]

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

1. if the first bit in the subtype of the media transmission notification message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '6' (Media transmission notification); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide media transmission notification to the user;
3. shall store the User ID and the SSRC of the user transmitting the media;
4. may display the details of the incoming media to the user; and
5. shall remain in the 'U: reception controller' state.

[TS 24.581, clause 6.2.5.3.3]

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

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

[TS 24.581, clause 6.2.5.4.5]

Upon receiving a granted response for Receive media request message, the transmission participant:

1. if the first bit in the subtype of the Receive media response message is set to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '7' (Receive media response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. shall provide receive media success notification to the user;
3. if the Receive Media Indicator field is included and the B-bit is set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T103 (Receive Media Request); and
5. shall enter the 'U: has permission to receive' state.

[TS 24.581, clause 6.2.5.5.3]

Upon receiving an indication from the user to end the RTP media reception, the transmission participant:

1. shall send a Media reception end request message towards the transmission control server The Media reception end request message:

- a. if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call); and
- b. shall include the SSRC of user transmitting the media in the Media reception end request message;
2. shall remove the indication that the participant is overriding without revoke if this indication is stored;
3. shall remove the indication that the participant is overridden without revoke if this indication is stored;
4. shall start timer T104 (Receive Media Release) and initialize counter C104 (Receive Media Release) to 1; and
5. shall enter the 'U: pending reception release' state.

[TS 24.581, clause 6.2.5.6.4]

Upon receiving a MRE response message, the transmission participant:

1. if the first bit in the subtype of the MRE response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '3' (Media reception end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Media reception end notification to the MCVideo user;
3. if the Receive Media Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T104 (Receive Media Release); and
5. shall enter the 'terminated' state.

6.1.1.11.3 Test description

6.1.1.11.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCPTT operation in the MCPTT configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCPTT User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.

- The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.1.11.3.2 Test procedure sequence

Table 6.1.1.11.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A 'Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
1	The SS (MCVideo Server) initiates an on-demand Imminent Peril group call with implicit Transmission Control.	<--	SIP INVITE	-	-
-	EXCEPTION: Steps 2a1 through 2a4 describe behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter" identifies a step sequence that take place if the UE (MCVideo Client) responds to a SIP INVITE prior to the MCVIDEO user's acknowledgment.	-	-	-	-
2a1	(Optional) The UE (MCVideo Client) responds with a SIP 100 Trying provisional response.	-->	SIP 100 (Trying)	-	-
2a2	(Optional) The UE (MCVideo Client) respond with a SIP 183 (Session Progress) message?	-->	SIP 183 (Session Progress)	-	-
2a3	The SS (MCVideo Server) responds to the SIP 183 (Session Progress) message with a SIP PRACK message.	<--	SIP PRACK	-	-
2a4	The UE (MCVideo Client) acknowledges the SIP PRACK message with SIP 200 (OK) message.	-->	SIP 200 (OK)	-	-
3	Make the MCVideo User answer the call. (NOTE 1)	-	-	-	-
4	Check: Does the UE (MCVideo Client) answer the call with a SIP 200 (OK)?	-->	SIP 200 (OK)	1	P
5	The SS (MCVideo Server) acknowledges the receipt of a SIP 200 (OK) for the SIP INVITE message.	<--	SIP ACK	-	-
6	The SS (MCVideo Server) sends a Media Transmission Notification message.	<--	Media Transmission Notification	-	-
7	Check: Does the UE (MCVideo Client) provide media transmission notification to the MCVideo User?	-	-	2	P
8	Make the MCVideo User request permission to receive media. (NOTE 1)	-	-	-	-
9	Check: Does the UE (MCVideo Client) send a Receive Media Request message?	-->	Receive Media Request	2	P
10	The SS (MCVideo Server) sends a Receive Media Response message.	<--	Receive Media Response	-	-
11	Make the MCVideo User request to end the RTP media reception. (NOTE 1)	-	-	-	-
12	Check: Does the UE (MCVideo Client) send a Media Reception End Request to indicate that the user wishes to end the RTP media reception?	-->	Media Reception End Request	3	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
13	The SS (MCVideo Server) responds with a Media Reception End Response message.	<--	Media Reception End Response	-	-
14	Make the MCVideo User end the call. (NOTE 1)	-	-	-	-
15	Check: Does the UE (MCVideo Client) send a SIP BYE message to leave the MCVideo session?	-->	SIP BYE	4	P
16	The SS (MCVideo Server) sends a SIP 200 (OK).	<--	SIP 200 (OK)	-	-
-	EXCEPTION: The SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-

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

6.1.1.11.3.3 Specific message contents

Table 6.1.1.11.3.3-1: SIP INVITE (Step 1, Table 6.1.1.11.3.2-1)

Derivation Path: TS 56.379-1 [2], Table 5.5.2.5.2-1, conditions GROUP-CALL, IMPERIL-CALL, MANUAL				
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 6.1.1.11.3.3-2			

Table 6.1.1.11.3.3-2: MCVideo-INFO in SIP INVITE (Table 6.1.1.11.3.3-1)

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.2-2, conditions GROUP-CALL, IMPERIL-CALL
--

Table 6.1.1.11.3.3-3: SIP 183 (Session Progress) (Step 2a2, Table 6.1.1.11.3.2-1)

Derivation Path: TS 56.379-1 [2], Table 5.5.2.16.3.1-1, conditions MCVIDEO
--

Table 6.1.1.11.3.3-4: SIP 200 (OK) (Step 2a4, Table 6.1.1.11.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

Table 6.1.1.11.3.3-5: Void

Table 6.1.1.11.3.3-6: Void**Table 6.1.1.11.3.3-7: Receive Media Request (Step 9, Table 6.1.1.6.3.2-1)**

Derivation Path: TS 36.579-1 [2], Table 5.5.11.1.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'0000100000000000'	E = Imminent Peril		

Table 6.1.1.11.3.3-8: Receive Media Response (Step 10, Table 6.1.1.6.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator	'00001000000000000'	E = Imminent Peril		

Table 6.1.1.11.3.3-9: Media Reception End Request (Step 12, Table 6.1.1.6.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.3-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'00001000000000000'	E = Imminent Peril		

Table 6.1.1.11.3.3-10: SIP BYE (Step 13 Table 6.1.1.11.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.2-1, condition MO-CALL				
--	--	--	--	--

Table 6.1.1.11.3.3-11: SIP 200 (OK) (Step 16, Table 6.1.1.11.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.1.2 Chat Group Call

6.1.2.1 On-network / Chat Group Call / Join Chat Group Session / End Chat Group Call / Client Originated (CO)

6.1.2.1.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an on-demand MCVideo group session using a
MCVideo group identity identifying a chat MCVideo group }
  then {the UE (MCVideo Client) requests to join the Chat Group Call by generating a SIP INVITE
message and, after indication from the MCVideo server that Transmission is granted, the UE (MCVideo
Client) provides transmission granted notification to the user and respects Transmission Control }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing On-demand Chat Group Call }
ensure that {
  when { the MCVideo User requests to release Transmission Control }
  then { UE (MCVideo Client) sends a Transmission End Request, and respects Transmission Control
(Transmission Granted, Transmission Control ACK, Transmission End Request, Transmission End
Response, Transmission Idle) }
}
```

(3)

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

6.1.2.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clause 9.2.2.2.1.1; Also, TS 24.581, clause 6.2.1, 6.2.4.1, 6.2.4.4.6, 6.2.4.5.3, 6.2.4.6.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281 clause 9.2.2.2.1.1]

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

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo chat group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 7) should include the "timer" option tag in the Supported header field;
- 8) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the refresher parameter is omitted. If included, the refresher parameter shall be set to "uac";
- 9) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

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

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

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

14) shall include in the SIP INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1;

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

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

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

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

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

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

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

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

[TS 24.581, clause 6.2.1]

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

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

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

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

[TS 24.581, clause 6.2.4.1]

The transmission participant shall behave according to the state diagram and the state transitions specified in this subclause.

Figure 6.2.4.1-1 shows the state diagram for 'Transmission participant state transition diagram for basic transmission control operation'.

...

State details are explained in the following subclauses.

If a transmission control message arrives in a state where there is no specific procedure specified for received transmission control message, the transmission participant shall discard the transmission control message and shall remain in the current state.

NOTE: A badly formatted transmission control message received in any state is ignored by the transmission participant and does not cause any change of the current state.

[TS 24.581, clause 6.2.4.4.6]

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

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

[TS 24.581, clause 6.2.4.5.3]

Upon receiving an indication from the user to end the permission to send RTP media, the transmission participant:

1. shall send a Transmission end request message towards the transmission control server. The Transmission end request message, if the session is a broadcast call and if the session was established as a normal call, shall include the Transmission Indicator with the A-bit set to '1' (Normal call);
2. shall start timer T101 (Transmission End Request) and initialize counter C101 (Transmission End Request) to 1; and
3. shall enter the 'U: pending end of transmission' state.

[TS 24.581, clause 6.2.4.6.4]

Upon receiving a Transmission end response message, the transmission participant:

1. if the first bit in the subtype of the Transmission end response message to '1' (Acknowledgment is required) as described in subclause 9.2.2.1, shall send a Transmission control Ack message. The Transmission control Ack message:
 - a. shall include the Message Type field set to '1' (Transmission end response); and
 - b. shall include the Source field set to '0' (the transmission participant is the source);
2. may provide a Transmission end notification to the MCVideo user;
3. if the Transmission Indicator field is included and the B-bit set to '1' (Broadcast group call), shall provide a notification to the user indicating the type of call;
4. shall stop timer T101 (Transmission End Request);
5. if the session is not a broadcast group call or if the A-bit in the Transmission Indicator field is set to '1' (Normal call), shall enter the 'U: has no permission to transmit' state; and
6. if the session was initiated as a broadcast group call:
 - a. shall indicate to the MCVideo client the media transmission is completed; and

b shall enter the 'Call releasing' state.

6.1.2.1.3 Test description

6.1.2.1.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server).
- E-UTRA related parameters are set to the default parameters for the basic single cell environment, as defined in TS 36.508 [24] subclause 4.4.

IUT:

- UE (MCVideo client) has been provisioned with the Initial UE Configuration Data as specified in TS 36.579-1 [2], subclause 5.5.8.1 allowing for the location of the configuration management server for configuration of the MCVideo UE initial configuration management object (MO) and the default MCVideo user profile configuration management object (MO).
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2] subclause 5.3.2A.
- UE States at the end of the preamble:
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and user has registered-in as the MCVideo User with the Server as active user at the client.

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 MCVideo User initiate an On-demand Chat Group Call. NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC related actions which step 1 above will trigger are described in TS 36.579-1 [2], subclause 5.4.3 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages being exchanged.	-		-	-
2	Check: Does the UE (MCVideo Client) send a SIP INVITE message to the Server?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) sends a SIP 100 (Trying) message in response.	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo Server) sends a SIP 200 (OK) from the Server.	<--	SIP 200 (OK)	-	-
5	The UE (MCVideo Client) acknowledges the SIP 200 (OK) message.	-->	SIP ACK	-	-
6	The SS (MCVideo Server) sends a Transmission Granted message.	<--	Transmission Granted	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
7	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message in response to the Transmission Granted message?	-->	Transmission Control Ack	1	P
8	Check: Does the UE (MCVideo Client) notify the user that the call has been successfully established? NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	1	P
9	Make the MCVideo User release Transmission Control. NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
10	Check: Does the UE (MCVideo Client) send a Transmission End Request message?	-->	Transmission End Request	2	P
11	The SS (MCVideo Server) sends a Transmission End Response to the UE (MCVideo Client) in response to the Transmission End Request.	<--	Transmission End Response	-	-
12	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message in response to the Transmission End Response?	-->	Transmission Control Ack	2	P
13	The SS (MCVideo Server) sends a Transmission Idle.	<--	Transmission Idle	-	-
14	Make the MCVideo User end the on-demand chat group call. NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
15	Check: Does the UE (MCVideo Client) send a SIP BYE message?	-->	SIP BYE	3	P
16	The SS (MCVideo Server) sends SIP 200 (OK).	<--	SIP 200 (OK)	-	-
-	EXCEPTION: The SS (MCVideo Server) releases the E-UTRA connection.	-	-	-	-

6.1.2.1.3.3 Specific message contents

Table 6.1.2.1.3.3-1: SIP INVITE (Step 2, Table 6.1.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
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 6.1.2.1.3.3-2			

Table 6.1.2.1.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.2.1.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-1, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.1.3.3-3: SIP 200 (OK) (Steps 4, Table 6.1.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo-info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.2.1.3.3-2			

Table 6.1.2.1.3.3-4: Transmission Granted (Step 6, Table 6.1.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator		Length is 16 bits, A-P.		
Transmission Indicator	'1000000000000000'	A = normal call		

Table 6.1.2.1.3.3-5: Transmission Control Ack (Step 7, Table 6.1.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	'00010001'	Transmission Control Ack message for Transmission Granted message which requested acknowledgment.		

Table 6.1.2.1.3.3-6: Transmission Control Ack (Step 12, Table 6.1.2.1.3.2-1)

Derivation Path: TS 24.581 [88], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	'00010001'	Transmission Control Ack message for Transmission End Response message which requested acknowledgment.		

Table 6.1.2.1.3.3-7: SIP BYE (Step 15, Table 6.1.1.1.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL				
--	--	--	--	--

Table 6.1.2.1.3.3-8: SIP 200 (OK) (Step 16, Table 6.1.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.1.2.2 On-network / Chat Group Call / Upgrade to Emergency Chat Group Call / Cancel Emergency Chat Group Call / Upgrade to Imminent Peril Chat Group Call / Cancel Imminent Peril Chat Group Call / Client Origination (CO)

6.1.2.2.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests the establishment of an on-demand MCVideo group session using a
MCVideo group identity identifying a chat MCVideo group }
  then { the UE (MCVideo Client) requests to join the Chat Group Call by generating a SIP INVITE
message and, after indication from the MCVideo server that Transmission is granted, the UE (MCVideo
Client) provides transmission granted notification to the user and respects Transmission Control }
}
```

(2)

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

(3)

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

(4)

```
with { UE (MCVideo Client) having upgraded an On-demand Pre-arranged Group Call to an Emergency Chat
Group Call and the MCVideo User being authorized for cancelling an MCVideo Emergency state (MCVideo
in-progress emergency cancel) }
ensure that {
  when { the MCVideo User wants to cancel the ongoing McVideo Emergency state }
  then { UE (MCVideo Client) sends a SIP re-INVITE request and upon receipt of a SIP 2xx response
considers the emergency condition cancelled and notifies the user that the call has been downgraded
}
}
```

(5)

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

(6)

```
with { UE (MCVideo Client) having upgraded an On-demand Chat Group Call to an Imminent Peril Group
Call and the MCVideo User being authorized for cancelling an MCVideo Imminent Peril Chat Group Call
state (MCVideo in-progress imminent peril cancel) }
ensure that {
  when { the MCVideo User requests to cancel the ongoing MCVideo Imminent Peril state }
}
```

```

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

```

(7)

```

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

```

6.1.2.2.2 Conformance Requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 9.2.2.2.1.1, 9.2.2.2.1.2, 9.2.2.2.1.3, 9.2.2.2.1.4, 9.2.2.2.1.5; Also TS 24.581 clauses 6.2.1, 6.2.4.4.6, 6.4.2, 6.4.3, 6.4.4. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 9.2.2.2.1.1]

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

The MCVideo client:

- 1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo chat group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.1;
- 2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in subclause 6.2.8.1.9;
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 7) should include the "timer" option tag in the Supported header field;
- 8) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the refresher parameter is omitted. If included, the refresher parameter shall be set to "uac";
- 9) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

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

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

11) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.1.2;

12) if the MCVideo client imminent peril group state for this group is set to "MIG 2: in-progress" or "MVIC 3: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.12;

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

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

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

14) shall include in the SIP INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.2.1;

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

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

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

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

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

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

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

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

[TS 24.281, clause 9.2.2.2.1.2]

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

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

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

- 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
 - a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call; and
 - b) shall set the MCVideo imminent peril group state to "MVIIG 2: in-progress";
- 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo emergency group call;
 - b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "false":
 - i) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and the MCVideo ID of the MCVideo user cancelling the MCVideo emergency alert; and
 - ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:
 - A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and
 - B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user, shall set the MCVideo emergency alert state to "MVEA 1: no-alert";
 - c) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and
 - d) if the MCVideo emergency group call state of the group is set to "MVEGC 3: emergency-call-granted", shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable";
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false":
 - a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call;
 - b) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
 - c) shall set the MCVideo imminent peril group call state to "MIGC 1: imminent-peril-gc-capable";
- 5) may check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2; and
- 10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11].

[TS 24.281, clause 9.2.2.2.1.3]

This subclause covers both on-demand session.

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

The MCVideo client:

- 1) if the MCVideo user is not authorised to cancel the in-progress emergency group state of the MCVideo group as determined by the procedures of subclause 6.2.8.1.7, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress emergency group state of the MCVideo group; and
 - b) shall skip the remaining steps of the current subclause;
- 2) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by the MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.3;
- 3) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by another MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.1.14;
- 4) shall, if the SIP re-INVITE request is to be sent within an on-demand session, include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [51] with the clarifications specified in subclause 6.2.1;
- 5) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.1.2; and
- 6) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

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

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

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

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

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

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

[TS 24.281, clause 9.2.2.2.1.4]

This subclause covers both on-demand sessions.

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

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

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

- 1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and
- 2) shall perform the actions specified in subclause 6.2.8.1.4.

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

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

[TS 24.281, clause 9.2.2.2.1.5]

This subclause covers on-demand session.

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

The MCVideo client:

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

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

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

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

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

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

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

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

NOTE 2: This is the case where the MCVideo client requested the cancellation of the MCVideo imminent peril in-progress state and was rejected.

[TS 24.581, clause 6.2.1]

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

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

1. shall be regarded an implicit Transmission request when an implicit Transmission request is negotiated; and

2. shall not be regarded as an implicit Transmission request in case of a rejoin to an already on-going group call.

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

[TS 24.581, clause 6.2.4.4.6]

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

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

[TS 24.581, clause 6.4.1]

Once an on-demand MCVideo session is established or a pre-established session is in use when the participating MCVideo function receives transmission control messages from the transmission participant in the MCVideo client or from the transmission control server in the controlling MCVideo function, the behaviour of the participating MCVideo function is described in the following subclauses.

[TS 24.581, clause 6.4.2]

Upon receiving a transmission control message the participating MCVideo function:

1. shall immediately forward the transmission control message to the transmission control server if the message is received from the transmission participant;
2. if an MBMS subchannel is not used for a transmission in the session the transmission control message is associated with, shall immediately forward the transmission control message to the transmission participant if the message is received from the transmission control server; and
3. if an MBMS subchannel is used for a transmission in the session the transmission control message is associated with:
 - a. if
 - i. the transmission control message is not a Transmission Idle message or a Media Transmission Notify message;
 - ii. the MCVideo client has not reported "listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3; or
 - iii. the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3 in the latest received MBMS bearer listening status report;shall immediately forward the transmission control message to the transmission participant; and
 - b. if

- i. the MCVideo client has reported "listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3 in the latest received MBMS bearer listening status report; and
- ii. if the transmission control message is the Transmission Idle message or the Media Transmission Notify message,

shall perform actions as specified in subclause 10.2.

NOTE: When the Transmit Idle or Media Transmission Notify messages are discarded the messages are sent to the MCVideo clients over the MBMS subchannel allocated for the transmission as specified in subclause 10.2.

[TS 24.581, clause 6.4.3]

Upon receiving RTP media packets the participating MCVideo function:

1. shall immediately forward the RTP media packet to the controlling MCVideo function if the RTP packet is from an MCVideo client; and
2. if an MBMS subchannel is not used for a transmission in the session the RTP media packets are associated with, shall immediately forward the RTP media packets to the MCVideo client if the RTP packet is from the controlling MCVideo function or the non-controlling MCVideo function.
3. if an MBMS subchannel is used for a transmission in the session the RTP media packets are associated with and if RTP media packets are received from the controlling MCVideo function or the non-controlling MCVideo function:
 - a. if
 - i. the MCVideo client has not reported "listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3; or
 - ii. the MCVideo client has reported "not-listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3 in the latest received MBMS bearer listening status report,
 shall immediately forward the RTP media packets to the MCVideo client; and
 - b. if the MCVideo client has reported "listening" status as specified in 3GPP TS 24.281 [2] subclause 14.2.3 in the latest received MBMS bearer listening status report, shall perform actions as specified in subclause 10.2.

[TS 24.581, clause 6.4.4]

When the participating function receives an indication from the application and signalling plane that session release is initiated, the participating MCVideo function:

1. shall stop sending transmission control messages towards the transmission participant and the transmission control server; and
2. shall stop sending RTP media packets towards the MCVideo client and towards the controlling MCVideo function.

When the participating MCVideo function receives an indication from the application and signalling plane that the session is released, the participating MCVideo function:

1. in case of a pre-established session, shall perform the actions in subclause 9.3.2; and
2. in case of an on-demand session, shall release the media resources associated with the session.

6.1.2.2.3 Test description

6.1.2.2.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)

- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10, is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- The MCVideo client has followed the steps defined in TS 36.579-1 [2], subclause 5.3.3A Generic Test Procedure for MCVideo pre-established session establishment CO.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.2.2.3.2 Test procedure sequence

Table 6.1.2.2.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the MCVideo User initiate an On-demand Chat Group Call. NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC related actions which step 1 above will trigger are described in TS 36.579-1 [2], subclause 5.4.3 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages being exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo Client) send a SIP INVITE message to the Server?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) sends a SIP 100 (Trying) message in response.	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo Server) sends a SIP 200 (OK) from the Server.	<--	SIP 200 (OK)	-	-
5	The UE (MCVideo Client) acknowledges the SIP 200 (OK) message.	-->	SIP ACK	-	-
6	The SS (MCVideo Server) sends a Transmission Granted message.	<--	Transmission Granted	-	-
7	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message in response to the Transmission Granted message?	-->	Transmission Control Ack	1	P
8	Check: Does the UE (MCVideo Client) notify the user that the call has been successfully established? NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	1	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
9	Make the MCVideo User request upgrade of the ongoing On-Demand Pre-arranged Chat Group Call to MCVideo Emergency Chat Group Call with explicit request for Transmission Control (implicit Transmission Control). NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
10	Check: Does the UE (MCVideo Client) send a SIP re-INVITE request message to upgrade the call to an Emergency Group Call with implicit Transmission Control?	-->	SIP re-INVITE	2	P
11	The SS (MCVideo Server) sends a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
12	The SS (MCVideo Server) sends a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
13	The UE (MCVideo Client) acknowledges the SIP 200 (OK).	-->	SIP ACK	-	-
14	The SS (MCVideo Server) sends a Transmission Granted message.	<--	Transmission Granted	-	-
15	Check: Does the UE (MCVideo Client) send a Transmission Control ACK message?	-->	Transmission Control ACK	3	P
16	Check: Does the UE (MCVideo client) notify the user that the Emergency Chat Group Call has been successfully established? NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	2	P
17	Make the MCVideo User downgrade the Emergency state NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
18	Check: Does the UE (MCVideo Client) send a SIP re-INVITE request message to cancel the Emergency state?	-->	SIP re-INVITE	4	P
19	The SS (MCVideo Server) sends a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
20	The SS (MCVideo Server) sends a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
21	The UE (MCVideo Client) acknowledges the SIP 200 (OK).	-->	SIP ACK	-	-
22	The SS (MCVideo Server) sends a Transmission Granted message.	<--	Transmission Granted	-	-
23	Check: Does the UE (MCVideo Client) send a Transmission Control ACK message?	-->	Transmission Control ACK	3	P
24	Check: Does the UE (MCVideo client) notify the user that the emergency state has been successfully cancelled? NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	4	-
25	Make the MCVideo User request upgrade of the ongoing On-Demand Pre-arranged Chat Group Call to MCVideo Imminent Peril Chat Group Call with explicit request for Transmission Control (implicit Transmission Control). NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
26	Check: Does the UE (MCVideo Client) send a SIP re-INVITE request message to upgrade the call to an Imminent Peril Group Chat Call with implicit Transmission Control?	-->	SIP re-INVITE	5	P
27	The SS (MCVideo Server) sends a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
28	The SS (MCVideo Server) sends a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
29	The UE (MCVideo Client) acknowledges the SIP 200 (OK).	-->	SIP ACK	-	-
30	The SS (MCVideo Server) sends a Transmission Granted message.	<--	Transmission Granted	-	-
31	Check: Does the UE (MCVideo Client) send a Transmission Control ACK message?	-->	Transmission Control ACK	3	P
32	Check: Does the UE (MCVideo client) notify the user that the Imminent Peril Chat Group Call has been successfully established? NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	5	P
33	Make the MCVideo User downgrade the Imminent Peril Chat Group session. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
34	Check: Does the UE (MCVideo Client) send a SIP re-INVITE request message to downgrade the Imminent Peril state?	-->	SIP re-INVITE	6	P
35	The SS (MCVideo Server) sends a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
36	The SS (MCVideo Server) sends a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
37	The UE (MCVideo Client) acknowledges the SIP 200 (OK).	-->	SIP ACK	-	-
38	The SS (MCVideo Server) sends a Transmission Granted message.	<--	Transmission Granted	-	-
39	Check: Does the UE (MCVideo Client) send a Transmission Control ACK message?	-->	Transmission Control ACK	3	P
40	Check: Does the UE (MCVideo client) notify the user that the Imminent Peril Call has been successfully cancelled? NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	6	P
41	Make the MCVideo User request to release Transmission Control. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
42	Check: Does the UE (MCVideo Client) send a Transmission End Request to terminate the Group Chat Call?	-->	Transmission End Request	3	P
43	The SS (MCVideo Server) sends a Transmission End Response message.	<--	Transmission End Response	-	-
44	Check: Does the UE (MCVideo Client) send a Transmission Control ACK message?	-->	Transmission Control ACK	3	P
45	The SS (MCVideo Server) sends a Transmission Idle message.	<--	Transmission Idle	-	-
46	Make the MCVideo User request to end the Chat Group Call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
47	Check: Does the UE (MCVideo Client) send a SIP BYE message?	-->	SIP BYE	7	P
48	The SS (MCVideo Server) sends a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
-	EXCEPTION: The SS releases the E-UTRA connection.	-	-	-	-

6.1.2.2.3.3 Specific message contents

Table 6.1.2.2.3.3-1: SIP INVITE (Step 2, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
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 6.1.2.2.3.3-2			

Table 6.1.2.2.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.2.2.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.2.3.3-3: SIP 200 (OK) (Steps 4, 20, 36, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				INVITE-RSP
MIME body part		MCVideo-info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.2.2.3.3-4			

Table 6.1.2.2.3.3-4: MCVideo-Info (Table 6.1.2.2.3.3-3)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.2.3.3-5: Transmission Granted (Steps 6, 22, 38, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'1000000000000000'	A = normal		

Table 6.1.2.2.3.3-6: Transmission Control Ack (Steps 7, 23, 39 Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	'00010000'	Transmission Control Ack message for Transmission Granted message which requested acknowledgment.		

Table 6.1.2.2.3.3-7: SIP re_INVITE (Step 10, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
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 6.1.2.2.3.3-8			

Table 6.1.2.2.3.3-8: MCVideo-Info in SIP re_INVITE (Table 6.1.2.2.3.3-7)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.2.3.3-9: SIP 200 (OK) (Steps 12, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				INVITE-RSP
MIME body part		MCVideo-info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.2.2.3.3-10			

Table 6.1.2.2.3.3-10: MCVideo-Info (Table 6.1.2.2.3.3-9)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.2-2, condition EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.2.3.3-11: Transmission Granted (Step 14, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator		Length is 16 bits, A-P.		
Transmission Indicator	'0001000000000000'	D = Emergency Call		

Table 6.1.2.2.3.3-12: Transmission Control Ack (Step 14, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	'00010000'	Transmission Control Ack message for Transmission Granted message which requested acknowledgment.		

Table 6.1.2.2.3.3-13: SIP re_INVITE (Step 18, 34, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
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 6.1.2.2.3.3-2			

Table 6.1.2.2.3.3-14: Transmission Granted (Steps 22, 38, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator		Length is 16 bits, A-P.		
Transmission Indicator	'1000000000000000'	A = normal		

Table 6.1.2.2.3.3-15: Transmission Control Ack (Step 24, 40, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	'00010000'	Transmission Control Ack message for Transmission Granted message which requested acknowledgment.		

Table 6.1.2.2.3.3-16: SIP re-INVITE (Step 26, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
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 6.1.2.2.3.3-17			

Table 6.1.2.2.3.3-17: MCVideo-Info in SIP re_INVITE (Table 6.1.2.2.3.3-16)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-2, condition IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.2.3.3-18: SIP 200 (OK) (Step 28, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				INVITE-RSP
MIME body part		MCVideo-info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.2.2.3.3-19			

Table 6.1.2.2.3.3-19: MCVideo-Info (Table 6.1.2.2.3.3-16)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.2-2, condition IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.2.3.3-20: Transmission Granted (Step 30, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator		Length is 16 bits, A-P.		
Transmission Indicator	'0000100000000000'	E = Imminent Peril		

Table 6.1.2.2.3.3-21: Transmission Control Ack (Step 31, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	'00010000'	Transmission Control Ack message for Transmission Granted message which requested acknowledgment.		

Table 6.1.2.2.3.3-22: Transmission End Response (Step 42, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	'10001'			

Table 6.1.2.2.3.3-23: Transmission Control Ack (Step 44, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type				
Message Type	'00010001'	Transmission Control Ack message for Transmission End Response message which requested acknowledgment.		

Table: 6.1.2.2.3.3-24: Transmission Idle (Step 45 from Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.16-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'1000000000000000'	A= normal call		

Table 6.1.2.2.3.3-25: SIP BYE (Step 47, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL				
Information Element	Value/remark	Comment	Reference	Condition

Table 6.1.2.2.3.3-26: SIP 200 (OK) (Step 48, Table 6.1.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.1.2.3 On-network / Chat Group Call / Upgrade to Emergency Chat Group Call / Cancel Emergency Chat Group Call / Upgrade to Imminent Peril Chat Group Call / Cancel Imminent Peril Chat Group Call / Client Terminated (CT)

6.1.2.3.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo User requests to join a MCVideo Chat Group Session }
  then { the UE (MCVideo Client) sends a SIP INVITE message to the SS (MCVideo Server) and
responds to a SIP 200 (OK) message from the SS (MCVideo Server) with a SIP ACK message, responds to
a Transmission Granted message from the SS (MCVideo Server) with a Transmission Control ACK
message, provides transmission granted notification to the MCVideo User, and respects Transmission
Control }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing Chat Group Call }
ensure that {
  when { the UE (MCVideo Client) receives an upgrade of the ongoing McVideo Group Call to an MCVideo
Emergency Group Call via a SIP INVITE message from the SS (MCVideo Server) }
  then { UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) response
and considers the call as being upgraded to an Emergency Group Call }
}
```

(3)

```

with { UE (MCVideo Client) having an ongoing Chat Group Call, which was upgraded to an Emergency
Chat Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a cancellation of the ongoing McVideo Emergency state via
a SIP re-INVITE message from the SS (MCVideo Server)}
  then { UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) response
and considers the emergency condition cancelled }
}

```

(4)

```

with { UE (MCVideo Client) having an ongoing Chat Group Call }
ensure that {
  when { the UE (MCVideo Client) receives an upgrade of the ongoing MCVideo Chat Group Call to a
MCVideo Imminent Peril Chat Group Call via a SIP re-INVITE message from the SS (MCVideo Server) }
  then { UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) response
and considers the call as being upgraded to an Imminent Peril Chat Group Call ( }
}

```

(5)

```

with { UE (MCVideo Client) having an ongoing Chat Group Call, which was upgraded to an Imminent
Peril Chat Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a cancellation of the ongoing McVideo Imminent Peril state
via a SIP re-INVITE message from the SS (MCVideo Server) }
  then { UE (MCVideo Client) responds to the SIP re-INVITE request with a SIP 200 (OK) response
and considers the imminent peril condition cancelled.}
}

```

(6)

```

with { UE (MCVideo Client) having an ongoing Chat Group Call }
ensure that {
  when { the UE (MCVideo Client) receives a Media Transmission Notification message from the SS
(MCVideo Server) }
  then {The UE (MCVideo Client) provides media transmission notification to the MCVideo User }
}

```

(7)

```

with { UE (MCVideo Client) having an ongoing Chat Group Call }
ensure that {
  when { the MCVideo User requests permission to receive media }
  then {The UE (MCVideo Client) sends a Receive Media Request message to the SS (MCVideo Server)
and provides receive media success notification to the MCVideo User upon reception of the Receive
Media Response message }
}

```

(8)

```

with { UE (MCVideo Client) having an ongoing Chat Group Call }
ensure that {
  when { the UE (MCVideo User) requests to terminate the ongoing MCVideo Chat Group Call }
  then { UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session }
}

```

6.1.2.3.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 9.2.2.3.1.1, 9.2.2.3.1.3, 9.2.2.4.1.1, 9.2.2.4.1.2, 9.2.2.4.1.3, 9.2.2.5.1.1, 9.2.2.5.1.2, 9.2.2.5.1.3, 9.2.2.5.1.6, 9.2.2.5.1.7; Also TS 24.581, clauses 6.2.4.2.2, 6.3.2.2, 6.3.4.4.12, 6.3.5.2.2, 6.3.5.3.9, and 6.3.5.4.8. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-14 requirements.

[TS 24.281, Clause 9.2.2.3.1.1]

In the procedures in this subclause:

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

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" for a group identity identifying a chat MCVideo group containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "chat", the participating MCVideo function:

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

NOTE 1: if the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorized request for originating a priority call as determined by subclause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to accept the request.

- 2) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request, and authorise the calling user;

NOTE 2: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in subclause 7.3.

- 3) if through local policy in the originating participating MCVideo function, the user identified by the MCVideo ID is not authorized to make chat group calls, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response to the SIP INVITE request, with warning text set to "108 user not authorized to make chat group calls" in a Warning header field as specified in subclause 4.4;
- 4) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;
- 5) shall check if the number of maximum simultaneous MCVideo group calls supported for the MCVideo user as specified in the <MaxSimultaneousCallsN6> element of the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) has been exceeded. If exceeded, the MCVideo function shall respond with a SIP 486 (Busy Here) response with the warning text set to "103 maximum simultaneous MCVideo group calls reached" in a Warning header field as specified in subclause 4.4. Otherwise, continue with the rest of the steps;

NOTE 3: If the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorized request for originating a priority call as determined by subclause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to allow for an exception to the limit for the maximum simultaneous MCVideo sessions supported for the MCVideo user.

- 6) if the user identified by the MCVideo ID is not affiliated to the group identified in the "SIP INVITE request for originating participating MCVideo function" as determined by subclause 8.2.2.2.11, shall perform the actions specified in subclause 8.2.2.2.12 for implicit affiliation;
- 7) if the actions for implicit affiliation specified in step 6) above were performed but not successful in affiliating the MCVideo user due to the MCVideo user already having N2 simultaneous affiliations, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 486 (Busy Here) response with the warning text set to "102 too many simultaneous affiliations" in a Warning header field as specified in subclause 4.4. and skip the rest of the steps.

NOTE 4: N2 is the total number of MCVideo groups that an MCVideo user can be affiliated to simultaneously as specified in 3GPP TS 23.281 [26].

NOTE 5: if the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorized request for originating a priority call as determined by subclause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to allow an exception to the N2 limit. Alternatively, a lower priority affiliation of the MCVideo user could be cancelled to allow for the new affiliation.

8) shall determine the public service identity of the controlling MCVideo function associated with the group identity in the SIP INVITE request;

NOTE 6: The public service identity can identify the controlling MCVideo function in the primary MCVideo system or a partner MCVideo system.

NOTE 7: How the participating MCVideo server discovers the public service identity of the controlling MCVideo function associated with the group identity is out of scope of the current document.

9) shall generate a SIP INVITE request as specified in subclause 6.3.2.1.3;

10) shall set the Request-URI to the public service identity of the controlling MCVideo function associated with the group identity present in the incoming SIP INVITE request;

11) shall include the MCVideo ID of the calling user in <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request;

12) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request as specified in subclause 6.3.2.1.1.1;

13) if the received SIP INVITE request contains an application/vnd.3gpp.location-info+xml MIME body as specified in Annex F.3; and

a) if not already included, shall include a Content-Type header field set to "application/vnd.3gpp.location-info+xml"; and

b) if not already copied, shall copy the contents of the application/vnd.3gpp.location-info+xml MIME body received in the SIP INVITE request into an application/vnd.3gpp.location-info+xml MIME body included in the outgoing SIP request;

NOTE 8: Note that the application/vnd.3gpp.mcvideo-info+xml MIME body will already have been copied into the outgoing SIP INVITE request by subclause 6.3.2.1.3.

14) if a Resource-Priority header field was included in the received SIP INVITE request, shall include a Resource-Priority header field according to rules and procedures of IETF RFC 4412 [33] set to the value indicated in the Resource-Priority header field of the SIP INVITE request from the MCVideo client; and

NOTE 9: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

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

Upon receipt of a SIP 302 (Moved Temporarily) response to the above SIP INVITE request in step 14), the participating MCVideo function:

1) shall generate a SIP INVITE request as specified in subclause 6.3.2.1.10;

2) shall include an SDP offer based upon the SDP offer in the received SIP INVITE request from the MCVideo client as specified in subclause 6.3.2.1.1.1; and

3) shall forward the SIP INVITE request according to 3GPP TS 24.229 [11];

Upon receipt of a SIP 2xx response to the above SIP INVITE request in step 14) the participating MCVideo function:

1) if the SIP 2xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in subclause 6.3.2.3.2;

2) shall generate a SIP 200 (OK) response as specified in the subclause 6.3.2.1.5.2;

3) shall include in the SIP 200 (OK) response an SDP answer as specified in the subclause 6.3.2.1.2.1;

- 4) shall include Warning header field(s) that were received in the incoming SIP 200 (OK) response;
- 5) shall include the public service identity received in the P-Asserted-Identity header field of the incoming SIP 200 (OK) response into the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response;
- 6) if the procedures of subclause 8.2.2.2.12 for implicit affiliation were performed in the present subclause, shall complete the implicit affiliation by performing the procedures of subclause 8.2.2.2.13;
- 7) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11]; and
- 8) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the above SIP INVITE request in step 14) the participating MCVideo function:

- 1) shall generate a SIP response according to 3GPP TS 24.229 [11];
- 2) shall include Warning header field(s) that were received in the incoming SIP response;
- 3) shall forward the SIP response to the MCVideo client according to 3GPP TS 24.229 [11]; and
- 4) if the implicit affiliation procedures of subclause 8.2.2.2.12 were invoked in the current procedure, shall perform the procedures of subclause 8.2.2.2.14.

[TS 24.281, clause 9.2.2.3.1.3]

This subclause covers on-demand session.

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

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

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

- 2) shall check the presence of the isfocus media feature tag in the URI of the Contact header field and if it is not present then the participating MCVideo function shall reject the request with a SIP 403 (Forbidden) response with the warning text set to "104 isfocus not assigned" in a Warning header field as specified in subclause 4.4. Otherwise, continue with the rest of the steps;
- 3) shall generate a SIP INVITE request as specified in subclause 6.3.2.2.3;
- 4) shall set the Request-URI to the public user identity associated with the MCVideo ID of the MCVideo user to be invited based on the contents of the Request-URI of the received "SIP INVITE request for terminating participating MCVideo function";
- 5) shall copy the contents of the P-Asserted-Identity header field of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the outgoing SIP INVITE request;
- 6) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for terminating participating MCVideo function" as specified in subclause 6.3.2.2.1;
- 7) if the received SIP INVITE request contains a Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field;
- 8) shall perform the procedures specified in subclause 6.3.2.2.9 to include any MIME bodies in the received SIP INVITE request; and
- 9) shall send the SIP INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the above SIP INVITE request sent to the MCVideo client, the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as described in the subclause 6.3.2.2.4.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer based on the SDP answer in the received SIP 200 (OK) response as specified in subclause 6.3.2.2.1;
- 3) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 4) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

[TS 24.0281, Clause 9.2.2.4.1.1]

In the procedures in this subclause:

- 1) MCVideo ID in an incoming SIP INVITE request refers to the MCVideo ID of the originating user from the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;
- 2) group identity in an incoming SIP INVITE request refers to the group identity from the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;
- 3) MCVideo ID in an outgoing SIP INVITE request refers to the MCVideo ID of the called user in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;
- 4) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
- 5) alert indication in an incoming SIP INVITE request refers to the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a "SIP INVITE request for controlling MCVideo function of an MCVideo group" containing a group identity identifying a chat MCVideo group, the controlling MCVideo function:

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

NOTE 1: If the SIP INVITE request contains an emergency indication set to a value of "true", the controlling MCVideo function can by means beyond the scope of this specification choose to accept the request.

- 2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:
 - a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag;
 - b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; or
 - c) the isfocus media feature tag is present in the Contact header field;
- 3) if received SIP INVITE request includes an application/vnd.3gpp.mcvideoinfo+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in subclause 6.3.3.1.17;
- 4) shall retrieve the necessary group document(s) from the group management server for the group identity contained in the SIP INVITE request and carry out initial processing as specified in subclause 6.3.5.2 and continue with the rest of the steps if the checks in subclause 6.3.5.2 succeed;
- 5) if the MCVideo user identified by the MCVideo ID in the SIP INVITE request is not affiliated with the MCVideo group identified by the group identity in the SIP INVITE request as determined by the procedures of subclause 6.3.6:

- a) shall check if the MCVideo user is eligible to be implicitly affiliated with the MCVideo chat group as determined by subclause 8.2.2.3.6; and
 - b) if the MCVideo user is not eligible for implicit affiliation, shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the warning text set to "120 user is not affiliated to this group" in a Warning header field as specified in subclause 4.4 and skip the rest of the steps below;
- 6) if the SIP INVITE request contains unauthorized request for an MCVideo emergency group call as determined by subclause 6.3.3.1.13.2:
- a) shall reject the SIP INVITE request with a SIP 403 (Forbidden) response as specified in subclause 6.3.3.1.14; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 7) if the SIP INVITE request contains an unauthorized request for an MCVideo imminent peril group call as determined by subclause 6.3.3.1.13.6, shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the following clarifications:
- a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminent-peril-ind> element set to a value of "false"; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 8) if a Resource-Priority header field is included in the SIP INVITE request:
- a) if the Resource-Priority header field is set to the value indicated for emergency calls and the SIP INVITE request does not contain an emergency indication and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps; and
 - b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the SIP INVITE request does not contain an imminent peril indication and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response; and skip the remaining steps;
- 9) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;
- 10) shall create a chat group session and allocate an MCVideo session identity for the chat group session if the MCVideo chat group session identity does not already exist, and may handle timer TNG3 (group call timer) as specified in subclause 6.3.3.5;
- 11) if the chat group session is ongoing and the <on-network-max-participant-count> as specified in 3GPP TS 24.481 [24] is already reached:
- a) if, according to local policy, the user identified by the MCVideo ID in the SIP INVITE request is deemed to have a higher priority than an existing user in the chat group session, may remove a participant from the session by following subclause 9.2.1.4.4.3, and skip the next step; and
- NOTE 2: The local policy for deciding whether to admit a user to a call that has reached its maximum amount of participants can include the <user-priority> and the <participant-type> of the user as well as other information of the user from the group document as specified in 3GPP TS 24.481 [24]. The local policy decisions can also include taking into account whether the imminent-peril indicator or emergency indicator was received in the SIP INVITE request.
- b) shall return a SIP 486 (Busy Here) response with the warning text set to "122 too many participants" to the originating network as specified in subclause 4.4. Otherwise, continue with the rest of the steps;
- 12) if the received SIP INVITE request was determined to be eligible for implicit affiliation in step 5) and if subclause 8.2.2.3.7 was not previously invoked in the present subclause, shall perform the implicit affiliation as specified in subclause 8.2.2.3.7;

13) if the SIP INVITE request contains an emergency indication set to a value of "true" or the in-progress emergency state of the group to "true" the controlling MCVideo function shall:

- a) validate that the SIP INVITE request includes a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in subclause 6.3.3.1.19, and if not:
 - i) perform the actions specified in subclause 6.3.3.1.8;
 - ii) send the SIP UPDATE request generated in subclause 6.3.3.1.8 towards the initiator of the SIP INVITE request according to 3GPP TS 24.229 [11]; and
 - iii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8, proceed with the rest of the steps.

NOTE 3: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress emergency states of the specified group.

- b) if the in-progress emergency state of the group is set to a value of "true" and this MCVideo user is indicating a new emergency indication:
 - i) for each of the other affiliated members of the group generate a SIP MESSAGE request notification of the MCVideo user's emergency indication as specified in subclause 6.3.3.1.11 with the following clarifications:
 - A) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";
 - B) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorized request for an MCVideo emergency alert meeting the conditions specified in subclause 6.3.3.1.13.1, perform the procedures specified in subclause 6.3.3.1.12; and
 - C) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];
 - ii) cache the information that this MCVideo user has initiated an MCVideo emergency call; and
 - iii) if the SIP INVITE request contains an authorized request for an MCVideo emergency alert as determined in step i) B) above, cache the information that this MCVideo user has initiated an MCVideo emergency alert; and
- c) if the in-progress emergency state of the group is set to a value of "false":
 - i) shall set the value of the in-progress emergency state of the group to "true";
 - ii) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in subclause 6.3.3.1.16;
 - iii) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other affiliated and joined participants of the chat MCVideo group as specified in subclause 6.3.3.1.6;
 - iv) shall generate SIP INVITE requests for the MCVideo emergency group call to the affiliated but not joined members of the chat MCVideo group as specified in subclause 6.3.3.1.7;
 - A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - B) upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];
 - v) shall cache the information that this MCVideo user has initiated an MCVideo emergency call; and
 - vi) if the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is set to "true" and is an authorized request for an MCVideo emergency alert as specified in subclause 6.3.3.1.13.1, shall cache the information that this MCVideo user has initiated an MCVideo emergency alert; and
 - vii) if the in-progress imminent peril state of the group is set to a value of "true", shall set it to a value of "false";

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

- a) validate that the SIP INVITE request includes a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in subclause 6.3.3.1.19, and if not:
 - i) perform the actions specified in subclause 6.3.3.1.8;
 - ii) send the SIP UPDATE request generated in subclause 6.3.3.1.8 towards the initiator of the SIP INVITE request according to 3GPP TS 24.229 [11]; and
 - iii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8 proceed with the rest of the steps.

NOTE 4: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress imminent peril states of the specified group.

- b) if the in-progress imminent peril state of the group is set to a value of "true" and this MCVideo user is indicating a new imminent peril indication:
 - i) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in subclause 6.3.3.1.11 with the following clarifications;
 - A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
 - ii) cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
- c) if the in-progress imminent peril state of the group is set to a value of "false":
 - i) shall set the value of the in-progress imminent peril state of the group to "true";
 - ii) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other affiliated and joined participants of the chat MCVideo group as specified in subclause 6.3.3.1.15;
 - iii) shall generate SIP INVITE requests for the MCVideo imminent peril call to the affiliated but not joined members of the chat MCVideo group as specified in subclause 6.3.3.1.7;
 - A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - B) Upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
 - iv) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call;

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

16) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.3.3.2.1 unless the procedures of subclause 6.3.3.1.8 were performed in step 13)a) or step 14)a) above;

17) should include the Session-Expires header field and start supervising the SIP session according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";

18) shall include the "timer" option tag in a Require header field;

19) shall include the following in a Contact header field:

- a) the g.3gpp.mcvideo media feature tag;

- b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- c) the MCVideo session identity; and
- d) the media feature tag isfocus;

20) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];

21) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorized request for an MCVideo emergency alert as specified in subclause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;

22) if the received SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true" and if the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;

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

23) shall interact with media plane as specified in 3GPP TS 24.581 [5];

24) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11]; and

25) if the chat group session was already ongoing and if at least one of the participants has subscribed to the conference event package, shall send a SIP NOTIFY request to all participants with a subscription to the conference event package as specified in subclause 9.2.3.4.2.

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

[TS 24.281, clause 9.2.2.4.1.2]

In the procedures in this subclause:

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

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

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

NOTE 1: if the SIP re-INVITE request contains an emergency indication or an imminent peril indication set to a value of "true" and this is an authorized request for originating an MCVideo emergency group call as determined by subclause 6.3.3.1.13.2, or for originating an MCVideo imminent peril group call as determined by subclause 6.3.3.1.13.5, the controlling MCVideo function can according to local policy choose to accept the request.

2) if the received SIP re-INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in subclause 6.3.3.1.17;

3) if the SIP re-INVITE request contains an unauthorized request for an MCVideo emergency call as determined by subclause 6.3.3.1.13.2:

- a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response as specified in subclause 6.3.3.1.14; and
- b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true" and is an authorized request to initiate an MCVideo emergency group call as determined by subclause 6.3.3.1.13.2, the controlling MCVideo function shall:
 - a) validate that the SIP re-INVITE request includes a Resource-Priority header field is populated correctly for an MCVideo emergency group call as specified in subclause 6.3.3.1.19, and if not:
 - i) shall perform the actions specified in subclause 6.3.3.1.8; and
 - ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.18 shall proceed with the rest of the steps.

NOTE 2: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress emergency states of the specified group.

- b) if the in-progress emergency state of the group is set to a value of "true" and this MCVideo user is indicating a new emergency indication:
 - i) shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency call;
 - ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and is an authorized request for an MCVideo emergency alert as determined by subclause 6.3.3.1.13.1, shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency alert; and
 - iii) for each of the other affiliated members of the group, generate a SIP MESSAGE request notification of the MCVideo user's emergency indication as specified in subclause 6.3.3.1.11 with the following clarifications:
 - A) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";
 - B) if the received SIP re-INVITE contains an alert indication set to a value of "true" and this is an authorized request for an MCVideo emergency alert meeting the conditions specified in subclause 6.3.3.1.13.1, perform the procedures specified in subclause 6.3.3.1.12; and
 - C) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
- c) if the in-progress emergency state of the group is set to a value of "false":
 - i) shall set the value of the in-progress emergency state of the group to "true";
 - ii) shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency call;
 - iii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and this is an authorized request for an MCVideo emergency alert as specified in subclause 6.3.3.1.13.1, shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency alert;
 - iv) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in subclause 6.3.3.1.16;
 - v) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other affiliated and joined participants of the chat MCVideo group as specified in subclause 6.3.3.1.6. The MCVideo controlling function:
 - A) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

- B) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- vi) shall generate SIP INVITE requests for the MCVideo emergency group call to the affiliated but not joined members of the chat MCVideo group as specified in subclause 6.3.3.1.7. The controlling MCVideo function:
- A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
- B) Upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- vii) if the in-progress imminent peril state of the group is set to a value of "true", shall set it to a value of "false";
- 5) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is an unauthorized request for an MCVideo emergency group call cancellation as determined by subclause 6.3.3.1.13.4:
- a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response;
- b) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <emergency-ind> element set to a value of "true";
- c) if an <alert-ind> element of the mcvideoinfo MIME body is included set to "false" and there is an outstanding MCVideo emergency alert for this MCVideo user, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body and <alert-ind> element set to a value of "true"; and
- d) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 6) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is determined to be an authorized request for an MCVideo emergency call cancellation as specified in subclause 6.3.3.1.13.4 and the in-progress emergency state of the group to is set to a value of "true" the controlling MCVideo function shall:
- a) validate that the SIP re-INVITE request includes a Resource-Priority header field is populated correctly for a normal priority MCVideo group call as specified in subclause 6.3.3.1.19, and if not:
- i) shall perform the actions specified in subclause 6.3.3.1.8; and
- ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8 shall proceed with the rest of the steps;

NOTE 3: Verify that the Resource-Priority header is included and properly populated for an in-progress emergency state cancellation of the specified group.

- b) shall set the in-progress emergency group state of the group to a value of "false";
- c) shall clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency group call;
- d) if an <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is included and set to "false" and is determined to be an authorized request for an MCVideo emergency alert cancellation as specified in subclause 6.3.3.1.13.3 and there is an outstanding MCVideo emergency alert for this MCVideo user shall:
- i) if the received SIP re-INVITE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency alert; and
- ii) if the received SIP re-INVITE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the sender of the SIP re-INVITE request as having an outstanding MCVideo emergency alert;

- e) shall generate SIP re-INVITE requests to the other affiliated and joined members of the MCVideo group as specified in subclause 6.3.3.1.6. The MCVideo controlling function:
 - i) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 4: Subclause 6.3.3.1.5 will inform the affiliated and joined members of the cancellation of the MCVideo group's in-progress emergency state and the cancellation of the MCVideo emergency alert if applicable.

- f) for each of the affiliated but not joined members of the group shall:
 - i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency call as specified in subclause 6.3.3.1.11;
 - ii) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";
 - iii) if indicated above in step d), set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and
 - iv) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];
- 7) if a Resource-Priority header field is included in the SIP re-INVITE request:
 - a) if the Resource-Priority header field is set to the value indicated for emergency calls and the received SIP re-INVITE request does not contain an authorized request for an MCVideo emergency call as determined in step 4) above and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps; or
 - b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the received SIP re-INVITE request does not contain an authorized request for an MCVideo imminent peril call as determined by the procedures of subclause 6.3.3.1.13.5 and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps;
- 8) if the received SIP re-INVITE request contains an imminent peril indication, shall perform the procedures specified in subclause 9.2.2.4.1.3 and skip the rest of the steps;
- 9) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.3.3.2.1 unless the procedures of subclause 6.3.3.1.8 were performed in step 6) a) i) above;
- 10) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];
- 11) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and if this is an unauthorized request for an MCVideo emergency alert as determined by subclause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;
- 12) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false" and if this is an unauthorized request for an MCVideo emergency alert cancellation as determined by subclause 6.3.3.1.13.3, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;
- 13) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true", this is an authorized request for an MCVideo imminent peril group call and if the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in subclause 4.4;

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

14) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and

15) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

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

[TS 24.281, clause 9.2.2.4.1.3]

In the procedures in this subclause:

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

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

- 1) if the SIP re-INVITE request contains an unauthorized request for an MCVideo imminent peril group call as determined by subclause 6.3.3.1.13.5, shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response with the following clarifications:
 - a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false"; and
 - b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;
- 2) if the in-progress emergency group state of the group is set to a value of "false" and if the SIP re-INVITE request contains an imminent peril indication set to a value of "true" or the in-progress imminent peril state of the group to "true", the controlling MCVideo function shall:
 - a) validate that the SIP re-INVITE request includes a Resource-Priority header field with the namespace set to the MCVideo-specific namespace and the priority set to the priority designated for imminent peril calls and if not:
 - i) perform the actions specified in subclause 6.3.3.1.8;
 - ii) send the SIP UPDATE request generated in subclause 6.3.3.1.8 towards the initiator of the SIP re-INVITE request according to 3GPP TS 24.229 [11]; and
 - iii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8 proceed with the rest of the steps.

NOTE 3: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress imminent peril states of the specified group.

- b) if the in-progress imminent peril state of the group is set to a value of "true" and this MCVideo user is indicating a new imminent peril indication:
 - i) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in subclause 6.3.3.1.11 with the following clarifications:
 - A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and
 - B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and
 - ii) cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and
- c) if the in-progress imminent peril state of the group is set to a value of "false":
 - i) shall set the value of the in-progress imminent peril state of the group to "true";

- ii) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other affiliated and joined participants of the chat MCVideo group as specified in subclause 6.3.3.1.15;
 - iii) shall generate SIP INVITE requests for the MCVideo imminent peril group call to the affiliated but not joined members of the chat MCVideo group as specified in subclause 6.3.3.1.7;
 - A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and
 - B) Upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
 - iv) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call;
- 3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is an unauthorized request for an MCVideo imminent peril group call cancellation as determined by subclause 6.3.3.1.13.6 shall:
- a) reject the SIP re-INVITE request with a SIP 403 (Forbidden) response to the SIP re-INVITE request; and
 - b) include in the SIP 403 (Forbidden) response:
 - i) include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false";
 - ii) send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11]; and
 - iii) skip the rest of the steps;
 - 4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is determined to be an authorized request for an MCVideo imminent peril call cancellation as specified in subclause 6.3.3.1.13.6 and the in-progress imminent peril state of the group to is set to a value of "true" the controlling MCVideo function shall:
 - a) validate that the SIP re-INVITE request includes a Resource-Priority header field with the namespace set to the MCVideo-specific namespace, and the priority set to the priority level designated for a normal priority MCVideo group call, and if not:
 - i) shall perform the actions specified in subclause 6.3.3.1.8; and
 - ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in subclause 6.3.3.1.8 shall proceed with the rest of the steps;

NOTE 3: verify that the Resource-Priority header is included and properly populated for an in-progress emergency group state cancellation of the specified group.

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

NOTE 4: subclause 6.3.3.1.15 will inform the affiliated and joined members of the cancellation of the MCVideo group's in-progress emergency group state and the cancellation of the MCVideo emergency alert if applicable.

- e) for each of the affiliated but not joined members of the group shall:

- i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's imminent peril call as specified in subclause 6.3.3.1.11;
 - ii) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and
 - iii) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];
- 5) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in subclause 6.3.3.2.1 unless the procedures of subclause 6.3.3.1.8 were performed in step 2) or 4) above;
 - 6) shall include the "norefersub" option tag in a Supported header field according to IETF RFC 4488 [31];
 - 7) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];
 - 8) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and
 - 9) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

[TS 24.281, clause 9.2.2.5.1.2]

Upon receipt of a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and if a chat group call is not ongoing, the non-controlling MCVideo function of an MCVideo group:

NOTE 1: The Contact header field of the SIP INVITE request contains the "isfocus" feature media tag.

- 1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;
- 2) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;
- 3) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:
 - a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or
 - b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- 4) if the partner MCVideo system does not have a mutual aid relationship with the primary MCVideo system identified by the contents of the P-Asserted-Identity, shall reject the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in subclause 4.4, and shall not process the remaining steps;
- 5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];
- 6) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the subclause x.x.x.x before continuing with the rest of the steps;
- 7) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the subclause x.x.x.x;
- 8) shall interact with the media plane as specified in 3GPP TS 24.581 [5] subclause 6.3.5; and

NOTE 2: Resulting media plane processing is completed before the next step is performed.

- 9) shall send a SIP 200 (OK) response to the controlling MCVideo function according to 3GPP TS 24.229 [11].

[TS 24.281, clause 9.2.2.5.1.3]

Upon receipt of a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and if a chat group call is already ongoing, the non-controlling MCVideo function of an MCVideo group:

NOTE 1: The Contact header field of the SIP INVITE request contains the "isfocus" feature media tag.

- 1) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;
- 2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:
 - a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or
 - b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";
- 3) if the partner MCVideo system does not have a mutual aid relationship with the primary MCVideo system identified by the contents of the P-Asserted-Identity, shall reject the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in subclause 4.4, and shall not process the remaining steps;
- 4) shall cache the content of the SIP INVITE request, if received in the Contact header field and if the specific feature tags are supported;
- 5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];
- 6) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the subclause x.x.x.x before continuing with the rest of the steps;
- 7) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the subclause x.x.x.x;
- 8) shall instruct the media plane to initialise the switch to the non-controlling mode as specified in 3GPP TS 24.581 [5] subclause x.x.x.x;

NOTE 2: Resulting media plane processing is completed before the next step is performed.

- 9) if the media plane provided information about the current speaker(s), cache the information about the current speaker(s); and
- 10) shall send a SIP 200 (OK) response to the controlling MCVideo function according to 3GPP TS 24.229 [11].

Upon receipt of the SIP ACK request, the non-controlling MCVideo function of an MCVideo group:

- 1) if information about a current speaker(s) is cached:
 - a) shall generate a SIP INFO request as specified in subclause x.x.x.x; and
 - b) shall send the SIP INFO request to the controlling MCVideo function as specified in 3GPP TS 24.229 [11];
- 2) shall instruct the media plane to finalise the switch to the non-controlling mode as specified in 3GPP TS 24.581 [5] subclause 6.3.5.3; and

Editor's Note: the need for these media plane procedures is FFS.

- 3) if at least one of the MCVideo clients in the chat group session has a subscription to the conference event package, shall subscribe to the conference event package from the controlling MCVideo function as specified in subclause 9.2.3.5.3.

[TS 24.281, clause 9.2.2.5.1.6]

Upon receipt of a SIP re-INVITE request from an MCVideo client the non-controlling MCVideo function shall act as the controlling MCVideo function and shall perform the actions in subclause 9.2.2.4.1.2.

[TS 24.281, clause 9.2.2.5.1.7]

Upon receipt of a SIP OPTIONS request containing a P-Asserted-Identity header field containing the public service identity of a MCVideo server authorized to send the OPTIONS request, the non-controlling MCVideo function shall perform the actions in subclause 9.2.1.5.4 otherwise the non-controlling MCVideo function shall send a SIP 403 (Forbidden) response as specified in 3GPP TS 24.229.

[TS 24.581, clause 6.2.4.2.2]

When a call is initiated as described in 3GPP TS 24.281 [2], the transmission participant:

1. shall create an instance of the 'Transmission participant state transition diagram for basic transmission control operation';
2. if the originating transmission participant receives a transmission control message before it receives the SIP 200 (OK) response, shall store the transmission control message;

NOTE: The originating transmission participant might receive a transmission control message before the SIP 200 (OK) response when initiating, joining or rejoining a call because of processing delays of the SIP 200 (OK) response in the SIP core.

3. if the established MCVideo call is a chat group call and the SIP INVITE request is not an implicit Transmission request, shall enter the 'U: has no permission to transmit' state;
4. if for the established MCVideo call the SIP INVITE request is an implicit Transmission request:
 - a. shall start timer T100 (Transmission Request) and initialise counter C100 (Transmission Request) to 1;
 - b. shall enter the 'U: pending request to transmit' state; and
 - c. if the transmission participant has received and stored a transmission control message before the reception of the SIP 200 (OK) response, shall act as if the transmission control message was received in the 'U: pending request to transmit' state after entering the 'U: pending request to transmit' state; and
5. if the established MCVideo call is a broadcast group call, shall enter the 'U: has permission to transmit' state.

When the transmission participant is rejoining an ongoing MCVideo call as described in 3GPP TS 24.281 [2] the transmission participant shall enter the 'U: has no permission to transmit' state.

[TS 24.581, clause 6.3.2.2]

When an MCVideo call is established a new instance of the transmission control server state machine for 'general transmission control operation' is created.

For each MCVideo client added to the MCVideo call, a new instance of the transmission control server state machine for 'basic transmission control operation towards the transmission participant' is added.

If the optional "mc_queueing" feature is supported and has been negotiated as specified in clause 14, the transmission control server could queue the implicit transmission control request for the media-transmission control entity.

The original initial SIP INVITE request or SIP REFER request to establish an MCVideo chat group call or to 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 subclause 14.3.3 and is based on group configuration data retrieved by the controlling MCVideo function from the group management server as described in 3GPP TS 24.481 [12] and service configuration data retrieved by the controlling MCVideo function from the configuration management server as described in 3GPP TS 24.484 [13].

The transmission participant and the transmission control server can negotiate queueing of Transmission requests using the "mc_queueing" fmp attribute as described in clause 14. If queueing is supported and negotiated, the transmission control server queues the transmission control request if a Transmission Media Request message is received when another transmission participant has the transmission and the priority of the current speaker is the same or higher.

[TS 24.581, clause 6.3.4.4.12]

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

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

[TS 24.581, clause 6.3.5.3.9]

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

1. shall indicate to the transmission control server arbitration logic that an implicit Transmission request is received due to an upgrade to an emergency group call; and

2. shall remain in the 'U: not permitted and Transmit Idle' state.

[TS 24.581, clause 6.3.5.4.8]

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

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

6.1.2.3.3 Test description

6.1.2.3.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.2.3.3.2 Test procedure sequence

Table 6.1.2.3.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo User) request initiation of a Chat Group Call. NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC related actions which step 1 above will trigger are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages being exchanged.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
2	Check: Does the UE (MCVideo Client) send a SIP INVITE to initiate a chat group call?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) sends a SIP 100 (Trying) message in response	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo Server) responds with a SIP 200 (OK).	<--	SIP 200 (OK)	-	-
5	Check: Does the UE (MCVideo Client) send a SIP ACK message to acknowledge the SIP 200 (OK)?	-->	SIP ACK	1	P
6	The SS (MCVideo Server) sends a Transmission Granted message.	<--	Transmission Granted	-	-
7	Check: Does the UE (MCVideo Client) send a Transmission Control ACK Message?	-->	Transmission Control ACK Message	1	P
8	Check: Does the UE (MCVideo client) provide Transmission granted notification to the MCVideo User? NOTE: This action is expected to be done via a suitable implementation dependent MMI.	-	-	1	P
9	Make the MCVideo User release Transmission Control. NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
10	Check: Does the UE (MCVideo Client) send a Transmission Release message?	-->	Transmission Release	1	P
11	The SS (MCVideo Server) sends a Transmission Idle to indicate that the transmission has ended and there are no current active transmissions.	<--	Transmission Idle	-	-
12	The SS (MCVideo Server) sends a SIP-re-INVITE message to indicate an upgrade of the Chat Group Call to an Emergency state.	<--	SIP re-INVITE	-	-
-	EXCEPTION: Step 13a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE responds to a SIP INVITE message with a SIP 100 (Trying) message.	-	-	-	-
13a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message in response	-->	SIP 100 (Trying)	-	-
14	Check: Does the UE (MCVideo Client) respond with a SIP 200 (OK)?	-->	SIP 200 (OK)	2	P
15	The SS (MCVideo Server) sends a SIP ACK message to acknowledge the SIP 200 (OK).	<--	SIP ACK	-	-
16	The SS (MCVideo Server) sends a Media Transmission Notification message to notify the UE client that an emergency media transmission is available from another user.	<--	Media Transmission Notification	-	-
17	Check: Does the UE (MCVideo Client) provide media transmission notification to the MCVideo User? NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	6	P
18	Make the MCVideo User to request permission to receive media. NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
19	Check: Does the UE (MCVideo Client) respond with a Receive Media Request message?	-->	Receive Media Request	7	P
20	The SS (MCVideo Server) sends a Receive Media Response message.	<--	Receive Media Response	-	-
21	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? NOTE: This is expected to be done via a	-	-	7	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	suitable implementation-dependent MMI.				
22	The SS (MCVideo Server) sends a SIP re-INVITE message to downgrade the Chat Group Call from an Emergency state to a regular Chat Group Call.	<--	SIP re-INVITE	-	-
-	EXCEPTION: Step 23a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE responds to a SIP INVITE message with a SIP 100 (Trying) message.	-	-	-	-
23a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message in response	-->	SIP 100 (Trying)	-	-
24	Check: Does the UE (MCVideo Client) responds with a SIP 200 (OK)?	-->	SIP 200 (OK)	3	P
25	The SS (MCVideo Server) sends a SIP ACK message to acknowledge the SIP 200 (OK).	<--	SIP ACK	-	-
26	The SS (MCVideo Server) sends a Media Transmission Notification message to notify the UE Client that a normal media transmission is available from another user.	<--	Media Transmission Notification	-	-
27	Check: Does the UE (MCVideo Client) provide media transmission notification to the MCVideo User? NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	6	P
28	Make the MCVideo User to request permission to receive media. NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
29	Check: Does the UE (MCVideo Client) respond with a Receive Media Request message?	-->	Receive Media Request	7	P
30	The SS (MCVideo Server) sends a Receive Media Response message.	<--	Receive Media Response	-	-
31	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	7	P
32	The SS (MCVideo Server) sends a SIP-re-INVITE message to upgrade the Chat Group Call to an Imminent Peril state.	<--	SIP re-INVITE	-	-
-	EXCEPTION: Step 33a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE responds to a SIP INVITE message with a SIP 100 (Trying) message.	-	-	-	-
33a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message in response	-->	SIP 100 (Trying)	-	.*
34	Check: Does the UE (MCVideo Client) responds with a SIP 200 (OK)?	-->	SIP 200 (OK)	4	P
35	The SS (MCVideo Server) sends a SIP ACK message to acknowledge the SIP 200 (OK).	<--	SIP ACK	-	-
36	The SS (MCVideo Server) sends a Media Transmission Notification message to notify the UE client that an imminent peril media transmission is available from another user.	<--	Media Transmission Notification	-	-
37	Check: Does the UE (MCVideo Client) provide media transmission notification to the MCVideo User? NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	6	P
38	Make the MCVideo User to request permission	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	to receive media. NOTE: This is expected to be done via a suitable implementation-dependent MMI.				
39	Check: Does the UE respond with a Receive Media Request message?	-->	Receive Media Request	7	P
40	The SS (MCVideo Server) sends a Receive Media Response message.	<--	Receive Media Response	-	-
41	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	7	P
42	The SS (MCVideo Server) sends a SIP re-INVITE message to downgrade the Chat Group Call from an Imminent Peril state to a regular Chat Group Call.	<--	SIP re-INVITE	-	-
-	EXCEPTION: Step 43a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE responds to a SIP INVITE message with a SIP 100 (Trying) message.	-	-	-	-
43a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message in response	-->	SIP 100 (Trying)	-	-*
44	Check: Does the UE (MCVideo Client) responds with a SIP 200 (OK)?	-->	SIP 200 (OK)	5	P
45	The SS (MCVideo Server) sends a SIP ACK message to acknowledge the SIP 200 (OK).	<--	SIP ACK	-	-
46	The SS (MCVideo Server) sends a Media Transmission Notification message to notify the UE Client that a normal media transmission is available from another user.	<--	Media Transmission Notification	-	-
47	Check: Does the UE (MCVideo Client) provide media transmission notification to the MCVideo User? NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	6	P
48	Make the MCVideo User to request permission to receive media. NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
49	Check: Does the UE respond with a Receive Media Request message?	-->	Receive Media Request	7	P
50	The SS (MCVideo Server) sends a Receive Media Response message.	<--	Receive Media Response	-	-
51	Check: Does the UE (MCVideo Client) provide receive media success notification to the MCVideo User? NOTE: This is expected to be done via a suitable implementation-dependent MMI.	-	-	7	P
52	The SS (MCVideo Server) sends a Transmission Idle message.	<--	Transmission Idle	-	-
53	Make the UE (MCVideo User) request termination of the MCVideo call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
54	Check: Does the UE (MCVideo Client) sends a SIP BYE message to end the chat group call?	-->	SIP BYE	8	P
55	The SS responds with a SIP 200 (OK)	<--	SIP 200 (OK)	-	-
-	EXCEPTION: SS releases the E-UTRA connection.	-	-	-	-

6.1.2.3.3.3 Specific message contents

Table 6.1.2.3.3.3-1: SIP INVITE (Step 2, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition MCVIDEO, GROUP-CALL				
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 6.1.2.3.3-2			

Table 6.1.2.3.3.3-2: MCVideo-Info in SIP INVITE (Table 6.1.2.3.3.3-1)

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.3.3.3-3: SIP 200 (OK) (Step 4, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		McVideo		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-4			

Table 6.1.2.3.3.3-4: MCVideo-Info in SIP INVITE (Table 6.1.2.3.3.3-3)

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.3.3.3-5 Transmission Granted (Step 6, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'1000000000000000'	A= normal call		

Table 6.1.2.3.3.3-6 Transmission Release (Step 10, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.1.3-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'1000000000000000'	A= normal call		

Table 6.1.2.3.3.3-7: Transmission Idle (Step 11, Table 6.1.2.3.3.2-1)

Derivation Path: 36.579-1 [2], Table 5.5.11.2.16-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'1000010000000000'	A= normal call F = Queueing supported		

Table 6.1.2.3.3.3-8: SIP re-INVITE (Step 12, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.5.2-1, condition re_INVITE, EMERGENCY-CALL, MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		McVideo		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-9			

Table 6.1.2.3.3.3-9: MCVideo-Info in SIP re-INVITE (Table 6.1.2.3.3.3-8)

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.2-2, condition GROUP-CALL, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.3.3.3-10: SIP 200 (OK) (Step 14, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.1-1, condition INVITE-RSP, MCVIDEO, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		McVideo		
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-11			

Table 6.1.2.3.3.3-11: MCVideo-Info in SIP INVITE (Table 6.1.2.3.3.3-10)

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.1-2, condition GROUP-CALL, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table: 6.1.2.3.3.3-12: Receive Media Request (Step 19, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.1.4-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'0001000000000000'	D = Emergency Call		

Table: 6.1.2.3.3.3-13: Receive Media Response (Step 20, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.8-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'0001000000000000'	D = Emergency Call		

Table 6.1.2.3.3.3-14: SIP re-INVITE (Steps 20, 38, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.2-1, condition RE-INVITE, MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		McVideo		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-15			
Message-body				

Table 6.1.2.3.3.3-15: MCVideo-INFO in SIP re-INVITE (Table 6.1.2.3.3.3-14)

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.2-3, condition RE-INVITE, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.3.3.3-16: SIP re-INVITE (Steps 29, Table 6.1.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.2-1, condition RE-INVITE, MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		McVideo		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.2.3.3.3-17			

Table 6.1.2.3.3.3-17: MCVideo-INFO in SIP re-INVITE (Table 6.1.2.3.3.3.16)

Derivation Path: TS 56.379-1 [2], Table 5.5.3.2.2-3, condition RE-INVITE, GROUP-CALL, IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
session-type	"chat"			

Table 6.1.2.4.3.3-18: SIP BYE (Step 48, Table 6.1.2.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL				
--	--	--	--	--

Table 6.1.2.4.3.3-19: SIP 200 (OK) (Step 49, Table 6.1.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.1.2.4 On-network / Chat Group Call / Emergency Call / Imminent Peril Call / Client

Terminated (CT)

6.1.2.4.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the UE (MCVideo Client) receives a SIP INVITE message of a MCVideo Emergency Chat Group Call }
  then { the UE (MCVideo Client) displays an indication for the MCVideo Emergency Chat Group Call to the MCVideo User and sends a SIP 200 OK as a response to the SIP INVITE message }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing MCVideo Emergency Chat Group Call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Emergency Chat Group Call }
  then { the UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session }
}
```

(3)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service }
ensure that {
  when { the MCVideo Client receives a SIP INVITE message of an MCVideo Imminent Peril Chat Group Call }
  then { the UE (MCVideo Client) displays an indication for the MCVideo Imminent Peril Chat Group Call to the MCVideo User and sends a SIP 200 OK as a response to the SIP INVITE message }
}
```

(4)

```
with { UE (MCVideo Client) having an ongoing MCVideo Imminent Peril Chat Group Call }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Imminent Peril Chat Group Call }
  then { UE (MCVideo Client) sends a SIP BYE request and leaves the MCVideo session }
}
```

6.1.2.4.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 24.281 clauses 9.2.2.2.1.6, 9.2.2.2.2.2, 6.2.6. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated, these are Rel-14 requirements.

[TS 24.281, clause 9.2.2.2.1.6]

This procedure is used for MCVideo emergency and MCVideo imminent peril calls when the MCVideo client is affiliated but not joined to the chat group.

In the procedures in this subclause:

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

Upon receipt of an initial SIP INVITE request, the MCVideo client:

- 1) may reject the SIP INVITE request if either of the following conditions is met:
 - a) MCVideo client does not have enough resources to handle the call; or
 - b) any other reason outside the scope of this specification;

- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure and skip the rest of the steps of this subclause;

NOTE 1: if the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.

- 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;
 - ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element; and
 - iii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;
 - b) shall set the MCVideo emergency group state to "MVEG 2: in-progress";
 - c) shall set the MCVideo imminent peril group state to "MVIIG 1: no-imminent-peril"; and
 - d) shall set the MCVideo imminent peril group call state to "MVIIGC 1: imminent-peril-gc-capable"; otherwise
- 4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo imminent peril group call and:
 - i) should display the MCVideo ID of the originator of the MCVideo imminent peril group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) should display the MCVideo group identity of the group with the imminent peril condition contained in the <mcvideo-calling-group-id> element; and
 - b) shall set the MCVideo imminent peril group state to "MVIIG 3: in-progress";
- 5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) shall accept the SIP INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];
- 7) shall include the option tag "timer" in a Require header field of the SIP 200 (OK) response;
- 8) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;
- 9) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;
- 10) shall include the Session-Expires header field in the SIP 200 (OK) response and start the SIP session timer according to IETF RFC 4028 [23]. If no "refresher" parameter was included in the received SIP INVITE request the "refresher" parameter in the Session-Expires header field shall be set to "uas", otherwise shall include a "refresher" parameter set to the value received in the Session-Expires header field the received SIP INVITE request;

- 11) shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;
- 12) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and
- 13) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 9.2.2.2.2.2]

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

[TS 24.281, clause 6.2.6]

Upon receiving a SIP BYE request, the MCVideo client:

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

6.1.2.4.3 Test description

6.1.2.4.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.1.2.4.3.2 Test procedure sequence

Table 6.1.2.4.3.2-1: Main Behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A Generic Test Procedure for MCVideo	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	CT communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.				
1	The SS (MCVideo Server) sends a SIP INVITE message to initiate an Emergency Chat Group Call	<--	SIP INVITE	1	P
-	EXCEPTION: Steps 2a1 describes optional behaviour that depends on the UE (MCVideo Client) implementation; the "lower case letter" identifies a step sequence that take place if the UE (MCVideo Client) responds to a SIP INVITE with a SIP 100 (Trying) message.	-	-	-	-
2a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message	-->	SIP 100 (Trying)	-	-
3	Check: Does the UE (MCVideo Client) answer the call with a SIP 200 (OK)?	-->	SIP 200 (OK)	1	P
4	The SS (MCVideo Server) sends a SIP ACK.	<--	SIP ACK	-	-
5	Check: Does the UE (MCVideo client) notify the user that the Emergency Chat Group Call has been successfully established? NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	1	P
6	The SS (MCVideo Server) sends a Transmission Idle message with no acknowledgement required	<--	Transmission Idle	-	-
7	Make the MCVideo User end the Emergency Chat Group Call. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
8	Check: Does the UE (MCVideo Client) send a SIP BYE message to end the on-demand group call.	-->	SIP BYE	2	P
9	The SS (MCVideo Server) sends a SIP 200 (OK)	<--	SIP 200 (OK)	-	-
-	EXCEPTION: SS releases the E-UTRA connection.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A 'Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
10	The SS (MCVideo Server) sends a SIP INVITE message to initiate an Imminent Peril Chat Group Call	<--	SIP INVITE	3	P
-	EXCEPTION: Steps 11a1 describes optional behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE (MCVideo Client) responds to a SIP INVITE with a SIP 100 (Trying) message.	-	-	-	-
11a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	-	-
12	Check: Does the UE (MCVideo Client) answer the call with a SIP 200 (OK)?	-->	SIP 200 (OK)	3	P
13	The SS (MCVideo Server) sends a SIP ACK.	<--	SIP ACK	-	-
14	Check: Does the UE (MCVideo client) notify the user that the Imminent Peril Group Call has been successfully established? NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	3	P
15	The SS (MCVideo Server) sends a Transmission Idle message with no acknowledgement required	<--	Transmission Idle	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
16	Make the MCVideo User end an on-demand chat group call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
17	Check: Does the UE (MCVideo Client) send a SIP BYE (to terminate the media plane)?	-->	SIP BYE	4	P
18	The SS (MCVideo Server) sends SIP 200 (OK).	<--	SIP 200 (OK)	-	-
-	EXCEPTION: SS(MCVideo Server) releases the E-UTRA connection.	-	-	-	-

6.1.2.4.3.3 Specific message contents

Table 6.1.2.4.3.3-1: SIP INVITE (Step 1, Table 6.1.2.4.3.2-1)

Derivation Path: TS 36.579 [2], Table 5.5.2.5.2-1, condition MCVIDEO, EMERGENCY-CALL, GROUP-CALL, EMERGENCY				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-headers				
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml" as described in Table 6.1.2.4.3.3-2			

Table 6.1.2.4.3.3-2: MCVideo-INFO in SIP INVITE (Table 6.1.2.4.3.3-1)

Derivation Path: TS 36.579-1, Table 5.5.3.2.2-2, condition MCVIDEO, GROUP-CALL, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-access-token	not present			
session-type	"chat"			

Table 6.1.2.4.3.3-3: SIP 200 (OK) (Step 3, Table 6.1.2.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-headers				
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml" as described in Table 6.1.2.4.3.3-4			

Table 6.1.2.4.3.3-4: MCVideo-INFO (Table 6.1.2.4.3.3-3)

Derivation Path: TS 36.579-1, Table 5.5.3.2.1-2, condition MCVIDEO, GROUP-CALL, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-access-token	not present			
session-type	"chat"			

Table 6.1.2.4.3.3-5: Transmission Idle (Step 6, Table 6.1.2.4.3.2-1)

Derivation Path: TS 36.579 [2], Table 5.5.11.2.17-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'0001000000000000'	D = Emergency Call		

Table 6.1.2.4.3.3-6: SIP BYE (Steps 8, 17, Table 6.1.2.4.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL				
--	--	--	--	--

Table 6.1.2.4.3.3-7: SIP 200 (OK) (Steps 9, 18, Table 6.1.2.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

Table 6.1.2.4.3.3-8: SIP INVITE (Step 10, Table 6.1.2.4.3.2-1)

Derivation Path: TS 36.579 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, GROUP-CALL, IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 6.1.2.4.3.3-9			

Table 6.1.2.4.3.3-9: MCVideo-INFO in SIP INVITE (Table 6.1.2.4.3.3-8)

Derivation Path: TS 36.579-1, Table 5.5.3.2.2-2, condition MCVIDEO, GROUP-CALL, IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-access-token	not present			
session-type	"chat"			

Table 6.1.2.4.3.3-10: SIP 200 (OK) (Step 12, Table 6.1.2.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, GROUP-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-headers				
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml" as described in Table 6.1.2.4.3.3-11			

Table 6.1.2.4.3.3-11: MCVideo-INFO (Table 6.1.2.4.3.3-10)

Derivation Path: TS 36.579-1, Table 5.5.3.2.1-2, condition MCVIDEO, GROUP-CALL, IMPERIL-CALL				
Information Element	Value/remark	Comment	Reference	Condition
mcvideoinfo				
mcvideo-Params				
mcvideo-access-token	not present			
session-type	"chat"			

Table: 6.1.2.4.3.3-12: Transmission Idle (Step 15, Table 6.1.2.4.3.2-1)

Derivation Path: TS 36.579 [2], Table 5.5.11.2.17-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'0000100000000000'	A = Normal call E =Imminent Peril		

6.2 Private Calls

6.2.1 On-network / Private Call / On-demand / Automatic Commencement Mode / With Transmission Control / Upgrade to Emergency Call / Cancellation of Emergency on User Request / Client Originated (CO)

6.2.1.1 Test Purpose (TP)

(1)

```
with { the UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised
to initiate/cancel Private and Private Emergency Calls with Automatic Commencement }
ensure that {
  when { the MCVideo User requests the establishment of a MCVideo Private Call, On-demand Automatic
Commencement Mode, no force of Automatic Commencement, applying end-to-end communication security
with Transmission Control }
  then { UE (MCVideo Client) sends a SIP INVITE message requesting Private Call On-demand
Automatic Commencement Mode, applying end-to-end communication security, and offering a media-level
section for a media-transmission control entity, and, after indication from the SS (MCVideo Server)
that Transmission is granted, the UE (MCVideo Client) provides transmission granted notification to
the user, and the user can participate in the Private Call }
}
```

(2)

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

(3)

```
with { UE (MCVideo Client) having established a MCVideo Private Call, On-demand Automatic
Commencement Mode with Transmission Control }
ensure that {
  when { the MCVideo User requests to upgrade the ongoing MCVideo Private Call to a MCVideo
Emergency Private Call with Transmission Control }
  then { UE (MCVideo Client) sends a SIP re-INVITE message requesting Private Emergency Call On-
demand Automatic Commencement Mode offering a media-level section for a media-transmission control
entity and, upon receipt of a SIP 200 (OK) response, considers the call as being upgraded to an
Emergency Private Call }
}
```

```

    }

```

(4)

```

with { UE (MCVideo Client) having upgraded a MCVideo Private Call, On-demand Automatic Commencement
Mode with Transmission Control to Emergency Private Call with Transmission Control }
ensure that {
  when { the MCVideo User engages in communication with the invited MCVideo User }
  then { UE (MCVideo Client) respects the Transmission Control imposed by the SS (MCVideo Server)
including override of the invited MCVideo User (who is not in MCVideo emergency state) and applying
Transmission Control confidentiality and integrity protection }
}

```

(5)

```

with { UE (MCVideo Client) having upgraded a MCVideo Private Call, On-demand Automatic Commencement
Mode with Transmission Control to Emergency Private Call with Transmission Control }
ensure that {
  when { the MCVideo User requests to downgrade the ongoing MCVideo Emergency Private Call }
  then { UE (MCVideo Client) sends a SIP re-INVITE request }
  and, upon receipt of a SIP 200 (OK) response, considers the emergency condition ended and the
call being reverted back to MCVideo Private Call }
}

```

(6)

```

with { UE (MCVideo Client) having an ongoing MCVideo Private Call, On-demand Automatic Commencement
Mode with Transmission Control }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo Private Call }
  then { UE (MCVideo Client) sends a SIP BYE request and after receiving a SIP 200 (OK) leaves the
MCVideo session }
}

```

6.2.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 10.2.2.2.1, 10.2.2.2.4, 10.2.2.2.5, 6.2.3.1.1. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.1]

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

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;

- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];
- 8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:
 - a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
 - c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty-eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of subclause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and
 - g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].
- 9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in subclause 6.2.1 and with a media stream of the offered media-transmission control entity;
- 10) if implicit transmission control is required, shall comply with the conditions specified in subclause 6.4;
- 11) if the MCVideo user is initiating a private call then:
 - a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];
 - b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:
 - i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
 - ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and
 - c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private";
- 12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.3.3; and
- 13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in subclause 6.2.8.3.4; and
- 3) shall notify the user that the call has been successfully established.

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

- 1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or
- 2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 10.2.2.2.4]

This subclause covers on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress emergency condition on an MCVideo emergency private call, the MCVideo client shall generate a SIP re-INVITE request by following the UE session procedures specified in 3GPP TS 24.229 [4], with the clarifications given below.

The MCVideo client:

- 1) if the MCVideo user is not authorised to cancel the in-progress emergency condition on an MCVideo emergency private call as determined by the procedures of subclause 6.2.8.3.1.2, the MCVideo client:
 - a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress emergency condition on an MCVideo emergency private call; and
 - b) shall skip the remaining steps of the current subclause;
- 2) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by the MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.3.6;
- 3) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by another MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.3.8;
- 4) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.3.3;
- 5) shall include in the SIP re-INVITE request an SDP offer the media parameters as currently established;

NOTE 1: The SIP re-INVITE request can be sent within an on-demand session or a pre-established session associated with an MCVideo group session. If the SIP re-INVITE request is sent within a pre-established session, the media-level section for the offered MCVideo video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

- 6) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [4].

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

- 1) shall interact with the user plane as specified in 3GPP TS 24.380 [5];
- 2) shall set the MCVideo emergency private priority state of the MCVideo private call to "MVEPP 1: no-emergency";

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

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

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

NOTE 2: If the in-progress emergency private priority state cancel request is rejected, the state of the session does not change, i.e. continues with MCVideo emergency private call level priority.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 10.2.2.2.5]

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

Upon receiving a request from an MCVideo user to upgrade the ongoing MCVideo private call to an MCVideo emergency private call, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [4], with the clarifications given below.

- 1) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.3.2;
- 2) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.3.3.
- 3) shall include an SDP offer with the media parameters as currently established according to 3GPP TS 24.229 [4];

NOTE: The SIP re-INVITE request can be sent within an on-demand session or a pre-established session associated with an MCVideo private call. If the SIP re-INVITE request is sent within a pre-established session, the media-level section for the offered MCVideo video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

- 4) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 5) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [4].

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

- 1) shall interact with the user plane as specified in 3GPP TS 24.380 [5]; and
- 2) shall perform the actions specified in subclause 6.2.8.3.4.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request, the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7

[TS 24.281, clause 6.2.3.1.1]

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

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

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

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

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

6.2.1.3 Test description

6.2.1.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.

- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client

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 MCVideo User request the establishment of a MCVideo Private Call, On-demand Automatic Commencement Mode, no force of Automatic Commencement, applying End-to-end Communication Security with Transmission Control. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC related actions, which step 1 above will trigger, are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages being exchanged.	-		-	-
2	Check: Does the UE (MCVideo Client) send an initial SIP INVITE message requesting the establishment of a MCVideo Private Call, On-demand Automatic Commencement Mode, no force of Automatic Commencement, applying End-to-End Communication Security with Transmission Control?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) responds to the UE (MCVideo Client) with a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo Server) sends a SIP 200 (OK) message to the UE (MCVideo Client), indicating that it has accepted the SIP INVITE message to establish a MCVideo Private Call.	<--	SIP 200 (OK)	-	-
5	The UE (MCVideo Client) sends an acknowledgement to the SS (MCVideo Server).	-->	SIP ACK	-	-
6	The SS (MCVideo Server) sends a Transmission Granted message to the UE (MCVideo Client).	<--	Transmission Granted	-	-
7	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message in response to Transmission Granted message from the SS (MCVideo Server)?	-->	Transmission Control Ack	2	P
8	Check: Does the UE (MCVideo Client) notify the MCVideo User that the call has been successfully established? NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	1	P
9	Make the UE (MCVideo Client) request an upgrade of the MCVideo Private Call to a MCVideo Private Emergency Group Call.	-	-	-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
10	Check: Does the UE (MCVideo Client) send a SIP re-INVITE message to upgrade a MCVideo Private Call to a MCVideo Private Emergency Group Call?	-->	SIP re-INVITE	3	P
11	The SS (MCVideo Server) sends a SIP 100 (Trying) message to the UE (MCVideo Client).	<--	SIP 100 (Trying)	-	-
12	The SS (MCVideo Server) sends a SIP 200 (OK) message to the UE (MCVideo Client).	<--	SIP 200 (OK)	-	-
13	The UE (MCVideo Client) sends a SIP ACK in acknowledgement to the SS (MCVideo Server).	-->	SIP ACK	-	-
14	The SS (MCVideo Server) sends a Transmission Granted message. NOTE: Override granted.	<--	Transmission Granted	-	-
15	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message acknowledging the Transmission Granted message from the SS (MCVideo Server)?	-->	Transmission Control Ack	4	P
16	Check: Does the UE (MCVideo Client) notify the MCVideo User that the call has been successfully upgraded to an emergency state?	-	-	3	P
17	Make the UE (MCVideo User) downgrade the MCVideo Emergency Private Call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-		
18	Check: Does the UE (MCVideo Client) send a SIP re-INVITE message requesting the downgrading of the MCVideo Private Emergency Call?	-->	SIP re-INVITE	5	P
19	The SS (MCVideo Server) sends a SIP 100 (Trying) message to the UE (MCVideo Client).	<--	SIP 100 (Trying)	-	-
20	The SS (MCVideo Server) sends SIP 200 (OK) indicating that it has accepted the SIP re-INVITE request to cancel the emergency condition.	<--	SIP 200 (OK)	-	-
21	The UE (MCVideo Client) sends a SIP ACK in acknowledgement.	-->	SIP ACK	-	-
22	The SS (MCVideo Server) sends a Transmission Granted message to the UE (MCVideo Client).	<--	Transmission Granted	-	-
23	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message?	-->	Transmission Control Ack	2	P
24	Check: Does the UE (MCVideo Client) notify the MCVideo User that the call has been successfully downgraded? NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	5	P
25	Make the MCVideo User request to release transmission. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
26	Check: Does the UE (MCVideo Client) request termination of the MCVideo Private Call?	-->	Transmission End Request	6	P
27	The SS (MCVideo Server) sends a response to the Transmission End Request.	<--	Transmission End Response	-	-
28	Check: Does the UE (MCVideo Client) send a Transmission Control Ack message to acknowledge the Transmission End	-->	Transmission Control Ack	2	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	Request?				
29	The SS (MCVideo Server) sends a Transmission Idle message.	<--	Transmission Idle	-	-
30	Make the UE (MCVideo Client) request to end the Private Call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
31	Check: Does the UE (MCVideo Client) send a SIP BYE message?	-->	SIP BYE	6	P
32	The SS (MCVideo Server) sends a SIP 200 (OK) message.	<--	SIP 200 (OK)	-	-
33	Wait for 5 sec to capture any not allowed behaviour (e.g. the UE (MCVideo Client) shall not send any Transmission Control messages).	-	-	-	-
-	EXCEPTION: SS (MCVideo Server) releases the E-UTRA connection.				

6.2.1.3.3 Specific message contents

Table 6.2.1.3.3-1: SIP INVITE (Step 2, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, conditions MCVIDEO, PRIVATE-CALL				
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 6.2.1.3.3-2			

Table 6.2.1.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.1.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL

Table 6.2.1.3.3-3: SIP 200 (OK) (Steps 4, 20, 32, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.2.1.3.3-2			

Table 6.2.1.3.3-4: Transmission Granted (Steps 6, 22, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	'10000'	Server → client		
Transmission Indicator				
Transmission Indicator	'100000000000000000'	A = normal call		

Table 6.2.1.3.3-5: Transmission Control ACK (Steps 7, 15, 23, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message type				
Message Type	'00010000'	Transmission Control Ack message for Transmission Granted message which requested acknowledgment		

Table 6.2.1.3.3-6: SIP re-INVITE (Step 10, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.5.1-1, condition MCVIDEO, PRIVATE-CALL, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo Info		
MIME-part-headers				
Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MIME-part-body	As described in Table 6.2.1.3.3-7			

Table 6.2.1.3.3-7: MCVideo-Info in SIP re_INVITE (Table 6.2.1.3.3-7)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-1, conditions PRIVATE-CALL, EMERGENCY-CALL				
--	--	--	--	--

Table 6.2.1.3.3-8: SIP 200 (OK) (Step 12, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, EMERGENCY-CALL, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo Info		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.1.1.1.3.3-7			

Table 6.2.1.1.3.3-9: Transmission Granted (Step 14, Table 6.2.1.1.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.11.2.1-1				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	'10000'	Server -> client		
Transmission Indicator				
Transmission Indicator	'0001000000000000'	D = Emergency Call		

Table 6.2.1.3.3-10: SIP re-INVITE (Step 18, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.5.1-1, condition MCVIDEO, PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 6.2.1.3.3-12			

Table 6.2.1.3.3-11: MCVideo-Info in SIP re-INVITE (Table 6.2.1.3.3-11)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.1-1, condition PRIVATE-CALL

Table 6.2.1.3.3-12: Transmission End Response (Step 27, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.2-1				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	'10001'			

Table 6.2.1.3.3-13: Transmission Control ACK (Step 28, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.11.3.5-1				
Information Element	Value/remark	Comment	Reference	Condition
Message Type	'10100'	Transmission Control Ack message for Transmission End Response message which requested acknowledgment		

Table 6.2.1.3.3-14: Transmission Idle (Step 29, Table 6.2.1.3.2-1)

Derivation Path: 36.579-1 [2], Table 5.5.11.2.16-1				
Information Element	Value/remark	Comment	Reference	Condition
Subtype	'01111'			
Transmission Indicator				
Transmission Indicator	'1000000000000000'	A = normal call		

Table 6.2.1.3.3-15: SIP BYE (Step 31, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL
--

Table 6.2.1.3.3-16: SIP 200 (OK) (Step 32, Table 6.2.1.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.2.2 On-network / Private Call / On-demand / Automatic Commencement Mode / With Transmission Control / Upgrade to Emergency Call / Cancellation of Emergency on User request / Client Terminated (CT)

6.2.2.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
receive private and private emergency calls with Automatic Commencement }
ensure that {
  when { the UE (MCVideo Client) receives a request for establishment of a MCVideo private call, On-
demand Automatic Commencement Mode, no force of Automatic Commencement, applying End-to-end
communication security with Transmission Control }
  then { UE (MCVideo Client) sends a SIP 200 (OK) accepting the establishment of an MCVideo
private call, On-demand Automatic Commencement Mode applying End-to-end communication security with
Transmission Control and, notifies the user for the call establishment }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing On-demand Automatic Commencement Mode private call with
Transmission Control }
ensure that {
  when { the MCVideo User engages in communication with the inviting MCVideo User }
  then { UE (MCVideo Client) respects the Transmission Control imposed by the MCVideo Server
(Transmission granting/release/reject/revoke) applying Transmission Control confidentiality and
integrity protection }
}
```

(3)

```
with { UE (MCVideo Client) having an ongoing On-demand Automatic Commencement Mode private call with
Transmission Control }
ensure that {
  when { the MCVideo User receives a request for upgrade of the ongoing MCVideo private call to a
MCVideo emergency private call with Transmission Control }
  then { UE (MCVideo Client) accepts the request and, upon sending SIP 200 (OK) message, considers
the call as being upgraded to emergency private call (emergency private call state = "MEPC 3:
emergency-pc-granted") and notified the MCVideo User of the upgraded call if
pc_DisplayInfoEmergencyCall }
}
```

(4)

```
with { UE (MCVideo Client) having an On-demand Automatic Commencement Mode private call with
Transmission Control upgraded to an emergency private call }
ensure that {
  when { the MCVideo User continues communication with the invited MCVideo User }
  then { UE (MCVideo Client) respects the transmission control imposed by the MCVideo Server
including being able to handle override requested by the inviting MCVideo user and applying
Transmission Control confidentiality and integrity protection }
}
```

(5)

```
with { UE (MCVideo Client) having an On-demand Automatic Commencement Mode private call with
Transmission Control that was upgraded to an emergency private call }
ensure that {
  when { the MCVideo User receives a request to cancel the ongoing MCVideo emergency condition on a
private call }
  then { UE (MCVideo Client) accepts the request and after sending a SIP 200 (OK) response
considers the emergency condition cancelled and the call being reverted back to MCVideo private call
and notified the MCVideo User of the downgraded call }
}
```

(6)

```

with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Manual
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) needs to terminate the ongoing MCVideo Group Call }
  then { the UE (MCVideo Client) sends a SIP BYE request and the SS (MCVideo Server) responds with
a SIP 200 (OK) and ends the MCVideo session }
}

```

6.2.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 10.2.2.2.2, 10.2.2.2.3, 10.2.2.2.4, 10.2.2.2.5, 6.2.3.1.1. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.2]

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

The MCVideo client:

- 1) may reject the SIP INVITE request if any of the following conditions are met:
 - a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];
 - b) MCVideo client does not have enough resources to handle the call; or
 - c) any other reason outside the scope of this specification;

otherwise, continue with the rest of the steps.

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

- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorized to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this subclause;
- 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
- 4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];

- c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
- d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in subclause 4.4; and
- e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 2: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

- 5) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.1 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client is willing to answer the call with automatic commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.1 if either of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Editor's note: a fragment here??

te call. Clause 7.4.1 is applied to convert the PCK into the SRTP Master Key/Salt, and clause 7.5 is applied for the protection of the first-to-answer media.

[TS 33.180, clause 7.2.5]

Ambient listening is a required feature for public safety users. Where the MC client may be used by non-public safety users, the feature shall not be implemented on the MC client and it shall not be possible to enable its use.

Ambient listening is described in clause 10.14 of 23.379 [2] and allows an authorized user to establish a "listening" private voice call with a target user without an indication that the communication is taking place. There are two types of ambient listening; the first type consists of the authorized user "listening" to a target user and the second type consists of the authorized user transmitting to a target user. Both types are initiated by the authorized user.

The MCPTT server provides the control and authorization verification associated with an ambient listening call.

The security for an ambient listening call is established similar to that of a secure private call, i.e. a PCK is created for the session and provided securely in the ambient listening call request from the authorized user to the target user as per clause 7.2.2 for on-network pUpon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVideo client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVideo client:

- 1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and
- 2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVideo client:

- 1) shall follow the procedures in subclause 10.2.5.2.

[TS 24.281, clause 10.2.2.2.3]

This subclause covers on-demand session.

Upon receipt of a SIP re-INVITE request for an existing private call session, the MCVideo client shall:

- 1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP re-INVITE request to upgrade this call to an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
- 2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":
 - a) should display to the MCVideo user an indication that this is a SIP re-INVITE request to downgrade this emergency private call to a normal priority private call and:
 - i) should display the MCVideo ID of the sender of the SIP re-INVITE request contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "false" should display to the MCVideo user an indication that the MCVideo emergency alert is cancelled;
 - iii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:
 - A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and
 - B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user, shall set the MCVideo emergency alert state to "MVPEA 1: no-alert";
 - b) shall set the MCVideo emergency private priority state to "MVEPP 1: no-emergency" for this private call; and
 - c) if the MCVideo emergency private call state of the call is set to "MVEPC 3: emergency-call-granted", shall set the MCVideo emergency private call state of the call to "MVEPC 1: emergency-pc-capable";

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

4) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;

NOTE 1: As this is a re-INVITE for an existing MCVideo private call session, there is no attempt made to change the answer-mode from its current state.

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

6) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in subclause 6.2.2;

7) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and

8) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

[TS 24.281, clause 10.2.2.2.4]

This subclause covers on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress emergency condition on an MCVideo emergency private call, the MCVideo client shall generate a SIP re-INVITE request by following the UE session procedures specified in 3GPP TS 24.229 [4], with the clarifications given below.

The MCVideo client:

1) if the MCVideo user is not authorized to cancel the in-progress emergency condition on an MCVideo emergency private call as determined by the procedures of subclause 6.2.8.3.1.2, the MCVideo client:

a) should indicate to the MCVideo user that they are not authorized to cancel the in-progress emergency condition on an MCVideo emergency private call; and

b) shall skip the remaining steps of the current subclause;

2) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by the MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.3.6;

3) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by another MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.3.8;

4) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.3.3;

5) shall include in the SIP re-INVITE request an SDP offer the media parameters as currently established;

NOTE 1: The SIP re-INVITE request can be sent within an on-demand session or a pre-established session associated with an MCVideo group session. If the SIP re-INVITE request is sent within a pre-established session, the media-level section for the offered MCVideo video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

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

7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [4].

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

1) shall interact with the user plane as specified in 3GPP TS 24.380 [5];

2) shall set the MCVideo emergency private priority state of the MCVideo private call to "MVEPP 1: no-emergency";

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

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

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

NOTE 2: If the in-progress emergency private priority state cancel request is rejected, the state of the session does not change, i.e. continues with MCVideo emergency private call level priority.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 10.2.2.2.5]

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

Upon receiving a request from an MCVideo user to upgrade the ongoing MCVideo private call to an MCVideo emergency private call, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [4], with the clarifications given below.

- 1) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in subclause 6.2.8.3.2;
- 2) shall include a Resource-Priority header field and comply with the procedures in subclause 6.2.8.3.3.
- 3) shall include an SDP offer with the media parameters as currently established according to 3GPP TS 24.229 [4];

NOTE: The SIP re-INVITE request can be sent within an on-demand session or a pre-established session associated with an MCVideo private call. If the SIP re-INVITE request is sent within a pre-established session, the media-level section for the offered MCVideo video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

- 4) if an implicit transmission request is required, shall indicate this as specified in subclause 6.4; and
- 5) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [4].

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

- 1) shall interact with the user plane as specified in 3GPP TS 24.380 [5]; and
- 2) shall perform the actions specified in subclause 6.2.8.3.4.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request, the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7

[TS 24.281, clause 6.2.3.1.1]

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

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

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

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

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

6.2.2.3 Test description

6.2.2.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCPTT configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.

- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.2.2.3.2 Test procedure sequence

Table 6.2.2.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
1	The SS (MCVideo server) sends SIP INVITE to request establishment of an MCVideo private call, On-demand Automatic Commencement Mode, no force of Automatic Commencement, applying End-to-end communication security with Transmission Control including a "text/plain" MIME body.	<--	SIP INVITE	-	-
-	EXCEPTION: Step 2a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE responds to a SIP INVITE message with a SIP 100 (Trying) message.	-	-	-	-
2a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	-	-
3	Check: Does the UE (MCVideo client) send a SIP 200 (OK) accepting the establishment of an MCVideo private call, On-demand Automatic Commencement Mode applying End-to-end communication security with Transmission Control?	-->	SIP 200 (OK)	1	P
4	The SS responds with a SIP ACK to acknowledge the SIP 200 (OK) message.	<--	SIP ACK	-	-
5	The SS sends a Transmission Granted message.	<--	Transmission Granted	-	-
6	Check: Does the UE send a Transmission Control ACK message?	-->	Transmission Control ACK	2	P
7	The SS (MCVideo server) sends SIP re-INVITE requesting the establishment (upgrade) of an MCVideo private emergency call on-demand Automatic Commencement Mode offering a media-level section for a media-transmission control entity.	<--	SIP re-INVITE	-	-
-	EXCEPTION: Step 8a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE responds to a SIP INVITE message with a SIP 100 (Trying) message.	-	-	-	-
8a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	-	-
9	Check: Does the UE MCVideo client) sends a SIP 200 (OK)?	-->	SIP 200 (OK)	3	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
10	The SS sends a SIP ACK in acknowledgement of the SIP 200 (OK) from the UE.	<--	SIP ACK	-	-
11	The SS sends a Transmission Granted message	<--	Transmission Granted	-	-
12	Check: Does the UE send a Transmission Control ACK message?	-->	Transmission Control ACK	4	P
-	EXCEPTION: Step 13a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE displays information to the User upon accepting establishment/releasing of the emergency call.	-	-	-	-
13a1	IF pc_DisplayIfoEmergencyCall THEN Check: Does the UE (MCVideo client) notify the user about the upgrade of the private call to an emergency private call? NOTE 1: This action is expected to be done via a suitable implementation-dependent MMI. NOTE 2: The display information may include - indication for upgrade of the private call to an emergency private call - the MCVideo ID of the sender of the SIP re-INVITE request.	-	-	3	P
14	The SS (MCVideo server) sends SIP re-INVITE to downgrade the emergency.	<--	SIP re-INVITE	-	-
-	EXCEPTION. Step 15a1 below is optional.				
15a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	-	-
16	Check: Does the UE (MCVideo client) send a SIP 200 (OK)?	-->	SIP 200 (OK)	5	P
17	The SS would respond SIP ACK to the UE (MCVideo Client).	<--	SIP ACK	-	-
18	The SS sends a Transmission Granted message	<--	Transmission Granted	-	-
19	Check: Does the UE send a Transmission Control ACK message?	-->	Transmission Control ACK	4	P
-	EXCEPTION: Step 20a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE displays information to the User upon accepting establishment/releasing of the emergency call.	-	-	-	-
20a1	Check: Does the UE (MCVideo client) notify the user about the downgrade of the emergency private call to a normal priority private call? NOTE 1: This action is expected to be done via a suitable implementation-dependent MMI. NOTE 2: The display information may include - indication for downgrade of the emergency private call to a normal priority private call - the MCVideo ID of the sender of the SIP re-INVITE request.	-	-	5	P
21	SS (MCVideo Server) sends a Transmission Idle message.	<--	Transmission Idle	-	-
22	Make the UE (MCVideo Client) end the Group Call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
23	Check: Does the UE (MCVideo Client) send a SIP BYE request?	-->	SIP BYE	6	P
24	The SS (MCVideo Server) sends a SIP 200 (OK).	<--	SIP 200 (OK)	-	-
-	EXCEPTION: SS releases the E-UTRA connection	-	-	-	-

6.2.2.3.3 Specific message contents

Table 6.2.2.3.3-1: SIP INVITE (Step 1, Table 6.2.2.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.5.2-1, conditions MCVIDEO, PRIVATE-CALL, AUTO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 6.2.2.3.3-2			

Table 6.2.2.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.2.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL

Table 6.2.2.3.3-3: SIP 200 (OK) (Step 3, 16, Table 6.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, 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 6.2.2.3.3-2			

Table 6.2.2.3.3-4: SIP re-INVITE (Step 7, Table 6.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.2-1, conditions MCVIDEO, EMERGENCY-CALL, AUTO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body		MCVideo-Info		
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MCVideo-Info	As described in Table 6.2.2.3.3-5			

Table 6.2.2.3.3-5: MCVideo-INFO in SIP re-INVITE (Table 6.2.2.3.3-5)

Derivation Path: TS 36.579-1 [2], Table 5.5.3.2.2-1, conditions EMERGENCY-CALL
--

Table 6.2.2.3.3-6: SIP 200 (OK) (Step 9, Table 6.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, EMERGENCY-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVIDEO-Info		
MIME-part-body	MCVideo-Info as described in Table 6.2.2.3.3-5			

Table 6.2.2.3.3-7: SIP re-INVITE (Step 14, Table 6.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.2-1, condition MCVIDEO, AUTO				
Information Element	Value/remark	Comment	Reference	Condition
Message-body		MCVideo-Info		

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.2-1, condition MCVIDEO, AUTO				
Information Element	Value/remark	Comment	Reference	Condition
MIME-Content-Type	"application/vnd.3gpp.mcvideo-info+xml"			
MCVideo-Info	As described in Table 6.2.2.3.3-8			

Table 6.2.2.3.3-8: MCVideo-Info in SIP INVITE (Table 6.2.2.3.3-7)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL				
---	--	--	--	--

Table 6.2.2.3.3-9: Transmission Idle (Step 21 Table 6.2.2.3.2-1)

Derivation Path: 36.579-1 [2], Table 5.5.11.2.17-1				
Information Element	Value/remark	Comment	Reference	Condition
Transmission Indicator				
Transmission Indicator	'1000010000000000'	A = normal call F = Queuing supported		

Table 6.2.2.3.3-10: SIP BYE (Step 23, Table 6.2.2.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL				
--	--	--	--	--

Table 6.2.2.3.3-11: SIP 200 (OK) (Step 24, Table 6.2.2.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.2.3 On-network / Private Call / On-demand / Automatic Commencement Mode / Without Transmission Control / Client Originated (CO)

6.2.3.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to
initiate/cancel private calls with Automatic Commencement }
ensure that {
  when { the MCVideo User requests the establishment of a MCVideo private call, On-demand Automatic
Commencement Mode, no force of Automatic Commencement, without Transmission Control }
  then { UE (MCVideo Client) sends a SIP INVITE message requesting On-demand Automatic
Commencement Mode and not offering a media-level section for a media-transmission control entity,
and, after indication from the MCVideo Server that the call was established, notifies the MCVideo
User and, does not apply Transmission Control }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing On-demand Automatic Commencement Mode private call
without Transmission Control }
ensure that {
  when { the MCVideo User requests to terminate the ongoing MCVideo private call }
  then { UE (MCVideo Client) sends a SIP BYE request and after receiving a SIP 200 (OK) and leaves
the MCVideo session }
}
```


6.2.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 10.2.1, 10.2.2.2.1, 6.2.5.1. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.1]

For on-network, the procedures for private call with transmission control are specified in subclause 10.2.2.

For on-network, the procedures for private call without transmission control are specified in subclause 10.2.3.

For on-network, the procedures for ending the private call initiated by MCVideo client are specified in subclause 10.2.4.

For on-network, the procedures for ending the private call initiated by MCVideo server are specified in subclause 10.2.5.

[TS 24.281, clause 10.2.2.2.1]

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

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];
- 8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:
 - a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
 - c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of subclause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];

- e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and
 - g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].
- 9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in subclause 6.2.1 and with a media stream of the offered media-transmission control entity;
- 10) if implicit transmission control is required, shall comply with the conditions specified in subclause 6.4;
- 11) if the MCVideo user is initiating a private call then:
- a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];
 - b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:
 - i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
 - ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and
 - c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private";
- 12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.3.3; and
- 13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in subclause 6.2.8.3.4; and
- 3) shall notify the user that the call has been successfully established.

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

- 1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or
- 2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 6.2.5.1]

When the MCVideo client wants to release an MCVideo session established using on-demand session signalling, the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11];
- 3) shall set the Request-URI to the MCVideo session identity to release; and
- 4) shall send a SIP BYE request towards MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request, the MCVideo client shall interact with the media plane as specified in 3GPP TS 24.581 [5].

6.4.3.3 Test description

6.4.3.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCPTT configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCPTT Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.2.3.3.2 Test procedure sequence

Table 6.2.3.3.2-1: Main behaviour

	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo User) request the establishment of a MCVideo private call, on-demand Automatic Commencement Mode, no force of automatic commencement, without Transmission Control. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment	-	-	-	-

	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
	are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.				
2	Check: Does the UE (MCVideo client) send an initial SIP INVITE message requesting the establishment of an MCVideo private call, on-demand Automatic Commencement Mode, no force of automatic commencement, without Transmission Control?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) sends a SIP 100 (Trying) message	<--	SIP 100 (Trying)	-	-
4	The SS responds with a SIP (OK).	<--	SIP 200 (OK)	-	-
5	The UE (MCVideo Client) sends a SIP ACK in acknowledgement of the SIP 200 (OK) message?	-->	SIP ACK	-	-
6	Check: Does the UE (MCVideo client) notify the user that the call has been successfully established? NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	1	P
7	Make the UE (MCVideo User) request termination of the MCVideo private call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
8	Check: Does the UE (MCVideo client) send a SIP BYE request?	-->	SIP BYE	2	P
9	The SS (MCVideo server) sends a SIP 200 (OK) in response.	<--	SIP 200 (OK)	-	-
10	Wait for 5 sec to capture any not allowed behaviour.	-	-		
-	EXCEPTION: SS releases the E-UTRA connection	-	-	-	-

6.2.3.3.3 Specific message contents

Table 6.2.3.3.3-1: SIP INVITE (Step 2, Table 6.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, conditions MCVIDEO, PRIVATE-CALL				
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 6.2.1.3.3-2			

Table 6.2.3.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.3.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL

Table 6.2.3.3.3-3: SIP 200 (OK) (Steps 4, Table 6.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-header				

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
MIME-part-body	MCVideo-Info as described in Table 6.2.1.3.3-2			

Table 6.2.3.3.3-4: SIP BYE (Step 8, Table 6.2.3.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL				
--	--	--	--	--

Table 6.2.3.3.3-5: SIP 200 (OK) (Step 9, Table 6.2.3.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

6.2.4 On-network / Private Call / On-demand / Automatic Commencement Mode / Without Transmission Control / Client Terminated (CT)

6.2.4.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service, including authorised to receive private and private emergency calls with Automatic Commencement }
ensure that {
  when { the UE (MCVideo Client) receives a request for establishment of an MCVideo private call, On-demand Automatic Commencement Mode, no force of Automatic Commencement, without Transmission Control }
  then { UE (MCVideo Client) sends a SIP 200 (OK) accepting the establishment of an MCVideo private call, On-demand Automatic Commencement Mode and not offering a media-level section for a media-transmission control entity and does not apply transmission control }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Manual Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) requests to terminate the ongoing MCVideo Group Call }
  then { the UE (MCVideo Client) sends a SIP BYE request and the SS (MCVideo Server) responds with a SIP 200 (OK) and ends the MCVideo session }
}
```

6.2.4.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 10.2.2.1, 10.2.2.2.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.1]

Subclause 10.2.2 specifies the MCVideo client procedures, participating MCVideo function procedures and controlling MCVideo function procedures for on-network private calls with transmission control. The procedures cover on-demand session establishment.

For a private call, the MCVideo client shall initiate the call to one MCVideo user

[TS 24.281, clause 10.2.2.2.2]

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

The MCVideo client:

- 1) may reject the SIP INVITE request if any of the following conditions are met:
 - a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];
 - b) MCVideo client does not have enough resources to handle the call; or
 - c) any other reason outside the scope of this specification;otherwise, continue with the rest of the steps.

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

- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this subclause;
- 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
- 4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in subclause 4.4; and
 - e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 2: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

- 5) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.1 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client is willing to answer the call with automatic commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.1 if either of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Upon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVideo client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVideo client:

- 1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and
- 2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVideo client:

- 1) shall follow the procedures in subclause 10.2.5.2.

6.2.4.3 Test description

6.2.4.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.2.4.3.2 Test procedure sequence

Table 6.2.4.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The E-UTRA/EPC related actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A 'Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
1	The SS (MCVideo server) sends SIP INVITE to request establishment of an MCVideo private call, on-demand Automatic Commencement, no Force of automatic commencement, without Transmission Control.	<--	SIP INVITE	-	-
-	EXCEPTION: Step 2a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE responds to a SIP INVITE message with a SIP 100 (Trying) message.	-	-	-	-
2a1	The UE responds with a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	-	-
3	Check: Does the UE (MCVideo client) send a SIP 200 (OK) accepting the establishment of an MCVideo private call, on-demand Automatic Commencement Mode without Transmission Control?	-->	SIP 200 (OK)	1	P
4	The SS (MCVideo Server) sends a SIP ACK in acknowledgement.	<--	SIP ACK	-	-
5	Make the UE (McVideo Client) end the call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.		-	-	-
6	Check: Does the UE (MCVideo Client) send a SIP BYE request?	-->	SIP BYE	2	P
7	The SS (MCVideo Server) sends a SIP 200 (OK).	<--	SIP 200 (OK)	-	-
8	Wait for 5 sec to capture any not allowed behaviour.	-	-	-	-
-	EXCEPTION: SS releases the E-UTRA connection.	-	-	-	-

6.2.4.3.3 Specific message contents

Table 6.2.4.3.3-1: SIP INVITE (Step 1, Table 6.2.4.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.5.2-1, conditions MCVIDEO, PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Answer-Mode				
answer-mode-value	"Auto"			
answer-mode-value	"Manual"			
Message-body				
MIME body part		MCVideo Info		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 6.2.4.3.3-2			

Table 6.2.4.3.3-2: MCVideo-INFO in SIP INVITE (Table 6.2.4.3.3-1)

Derivation Path: TS 36.579-1, Table 5.5.3.2.2-1, conditions MCVIDEO, PRIVATE-CALL

Table 6.2.4.3.3-3: SIP 200 (OK) (Step 3, Table 6.2.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-body	MCVideo-Info as described in Table 6.2.4.3.3-2			

Table 6.2.4.3.3-4: SIP BYE (Step 6, Table 6.2.4.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL
--

Table 6.2.4.3.3-5: SIP 200 (OK) (Step 7, Table 6.2.4.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

6.2.5 On-network / Private Call / Emergency Private Call / On-demand / Automatic Commencement Mode / Force of Automatic Commencement Mode / Without Transmission Control / Client Originated (CO)

6.2.5.1 Test Purpose (TP)

(1)

with { UE (MCVideo Client) registered and authorised for MCVideo Service including authorisation to initiate and cancel emergency calls }
ensure that {

```

when { the MCVideo User requests the establishment of an MCVideo private emergency call, On-
demand, Automatic Commencement Mode, force of Automatic Commencement Mode without Transmission
Control }
  then { UE (MCVideo Client) requests private emergency call establishment without Transmission
Control by sending a SIP INVITE message including a Priv-Answer-Mode header field with the value
"Auto" not offering a media-level section for a media-transmission control entity and, after
indication from the MCVideo Server that the call was established notifies the user and, does not
apply Transmission Control }
  }

```

(2)

```

with { UE (MCVideo Client) having established an emergency private call }
ensure that {
  when { the UE (MCVideo User) requests to terminate the ongoing MCVideo emergency private call }
    then { UE (MCVideo Client) sends a SIP BYE request and after receiving a SIP 200 (OK) leaves the
MCVideo session }
  }

```

6.2.5.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 10.2.2.2.1, 6.2.3.1.1, and 4.6.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.1]

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

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;
- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];
- 8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:
 - a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];

- c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of subclause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and
 - g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].
- 9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in subclause 6.2.1 and with a media stream of the offered media-transmission control entity;
- 10) if implicit transmission control is required, shall comply with the conditions specified in subclause 6.4;
- 11) if the MCVideo user is initiating a private call then:
- a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];
 - b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:
 - i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
 - ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and
 - c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private";
- 12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.3.3; and
- 13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in subclause 6.2.8.3.4; and
- 3) shall notify the user that the call has been successfully established.

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

- 1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or
- 2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 6.2.3.1.1]

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

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

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

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

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

[TS24.281, clause 4.6.2]

MCVideo emergency private calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency private call functionalities are specified in the present document:

- MCVideo emergency private call origination with optional MCVideo emergency alert initiation;
- upgrade of an MCVideo private call to an MCVideo emergency private; and
- cancellation of the MCVideo emergency private call priority.

Key aspects of MCVideo emergency private calls include:

- adjusted EPS bearer priority for both participants whether or not they are both in an emergency condition (i.e. both have their MCVideo emergency state set). This is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43];
- the initiator of the MCVideo emergency private call can override the other MCVideo user in the MCVideo emergency private call unless that user also has their MCVideo emergency state set;

- restoration of normal EPS bearer priority to the call according to system policy (e.g., configured time limit for the emergency priority of an MCVideo emergency private call or cancellation of the emergency condition of the private call);
- restoration of normal transmission control priority participants when the emergency elevated priority is cancelled;
- requires the MCVideo user to be authorised to either originate or cancel an MCVideo emergency private call;
- requires the targeted MCVideo user to be authorised to receive an MCVideo emergency private call;
- requests to originate MCVideo emergency private calls may also include an indication of an MCVideo emergency alert; and
- the originator of the MCVideo emergency private call can request that the call use either manual or automatic commencement mode.

There are a number of states that are key in managing these aspects of MCVideo emergency private calls, which include:

- **MCVideo emergency state (MVES):** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorised MCVideo user. While the MCVideo emergency state is set on the client, all MCVideo group and private calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorised for MCVideo emergency calls on them.
- **MCVideo private emergency alert (MVPEA) state:** this is an internal state of the MCVideo client which in conjunction with the MCVideo emergency private call state aids in managing the MCVideo emergency state and related actions.
- **MCVideo emergency private call (MVEPC) state:** this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.
- **In-progress emergency private call (IPEPC) state:** indicates whether or not there is an MCVideo emergency private call in-progress for the two participants. This state is managed by the controlling MCVideo function. All private calls originated between these two participants when in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator is in an MCVideo emergency state.
- **MCVideo emergency private priority (MVEPP) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency private call state of the private call managed by the controlling MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency private priority state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency private call and is not in the MCVideo emergency state, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency private priority state of the private call (i.e., the two participants), it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

NOTE: The above states and their transitions are described in Annex G.

6.2.5.3 Test description

6.2.5.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4.

The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCPTT configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.2.5.3.2 Test procedure sequence

Table 6.2.5.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo User) request the establishment of an MCVideo private emergency call, force of automatic commencement mode, without Transmission Control. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC actions that are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo client) send an initial SIP INVITE request, including a Priv-Answer-Mode header field with the value "Auto" and not offering a media-level section for a media-transmission control entity requesting the establishment of an MCVideo private call, automatic commencement mode?	-->	SIP INVITE	1	P
3	The SS (MCVideo server) sends a SIP 100 (Trying) message.	<--	SIP 100 (Trying)	-	-
4	The SS (MCVideo server) sends SIP 200 (OK).	<--	SIP 200 (OK)	-	-
5	The UE acknowledges the SIP 200 (OK) from the SS with a SIP ACK message.	-->	SIP ACK	-	-
6	Check: Does the UE (MCVideo client) notify the user that the call has been successfully established? NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	1	P
7	Make the UE (MCVideo User) request termination of the MCVideo private emergency call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-

8	Check: Does the UE (MCVideo client) sends a SIP BYE request to terminate the private call.	-->	SIP BYE	2	P
9	The SS (MCVideo server) sends SIP 200 (OK).	<--	SIP 200 (OK)	-	-
10	Wait for 5 sec to capture any not allowed behaviour.	-	-	-	-
-	EXCEPTION: SS releases the E-UTRA connection	-	-	-	-

6.2.5.3.3 Specific message contents

Table 6.2.5.3.3-1: SIP INVITE (Step 2, Table 6.2.5.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, conditions MCVIDEO, PRIVATE-CALL				
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 6.2.5.3.3-2			

Table 6.2.5.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.5.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL

Table 6.2.5.3.3-3: SIP 200 (OK) (Steps 4, Table 6.2.5.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.2.5.3.3-2			

Table 6.2.5.3.3-4: SIP BYE (Step 8, Table 6.2.5.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL
--

Table 6.2.5.3.3-5: SIP 200 (OK) (Step 9, Table 6.2.5.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

6.2.6 On-network / Private Call / Emergency Private Call / On-demand / Manual Commencement Mode / Force of automatic commencement mode / Without Transmission Control / Client Terminated (CT)

6.2.6.1 Test Purpose (TP)

(1)

```
with { UE (MCVideo Client) registered and authorised for MCVideo Service including authorisation to
receive an MCVideo private call, the MCVideo Service setting for answering the call is set to Manual
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) receives a request for establishment of an MCVideo emergency
private call, On-demand Automatic Commencement Mode, force of Automatic Commencement Mode without
Transmission Control }
  then { UE (MCVideo Client) accepts the call (automatic commencement) by sending a SIP 200 (OK)
message accepting the private emergency call, On-demand Automatic Commencement Mode, not offering a
media-level section for a media-transmission control entity, and, notifies the user, and, does not
apply Transmission Control }
}
```

(2)

```
with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Manual
Commencement Mode }
ensure that {
  when { the UE (MCVideo Client) requests to terminate the ongoing MCVideo Group Call }
  then { the UE (MCVideo Client) sends a SIP BYE request and the SS(MCVideo Server) responds with
a SIP 200 (OK) and leaves the MCVideo session }
}
```

6.2.6.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 10.2.2.2.1, 6.2.3.1.1, 4.6.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.1]

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

The MCVideo client:

- 1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;
- 2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];
- 3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];
- 4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];
- 5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;

- 6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];
- 7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];
- 8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:
 - a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];
 - b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];
 - c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];
 - d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of subclause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];
 - e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and
 - g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and
 - f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].
- 9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in subclause 6.2.1 and with a media stream of the offered media-transmission control entity;
- 10) if implicit transmission control is required, shall comply with the conditions specified in subclause 6.4;
- 11) if the MCVideo user is initiating a private call then:
 - a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];
 - b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:
 - i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and
 - ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and
 - c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private";
- 12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in subclause 6.2.8.3.3; and
- 13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

- 1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

- 1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];
- 2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in subclause 6.2.8.3.4; and
- 3) shall notify the user that the call has been successfully established.

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

- 1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or
- 2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in subclause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in subclause 6.2.8.3.7.

[TS 24.281, clause 6.2.3.1.1]

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

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

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

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

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

[TS24.281, clause 4.6.2]

MCVideo emergency private calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency private call functionalities are specified in the present document:

- MCVideo emergency private call origination with optional MCVideo emergency alert initiation;

- upgrade of an MCVideo private call to an MCVideo emergency private; and
- cancellation of the MCVideo emergency private call priority.

Key aspects of MCVideo emergency private calls include:

- adjusted EPS bearer priority for both participants whether or not they are both in an emergency condition (i.e. both have their MCVideo emergency state set). This is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43];
- the initiator of the MCVideo emergency private call can override the other MCVideo user in the MCVideo emergency private call unless that user also has their MCVideo emergency state set;
- restoration of normal EPS bearer priority to the call according to system policy (e.g., configured time limit for the emergency priority of an MCVideo emergency private call or cancellation of the emergency condition of the private call);
- restoration of normal transmission control priority participants when the emergency elevated priority is cancelled;
- requires the MCVideo user to be authorised to either originate or cancel an MCVideo emergency private call;
- requires the targeted MCVideo user to be authorised to receive an MCVideo emergency private call;
- requests to originate MCVideo emergency private calls may also include an indication of an MCVideo emergency alert; and
- the originator of the MCVideo emergency private call can request that the call use either manual or automatic commencement mode.

There are a number of states that are key in managing these aspects of MCVideo emergency private calls, which include:

- **MCVideo emergency state (MVES):** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorised MCVideo user. While the MCVideo emergency state is set on the client, all MCVideo group and private calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorised for MCVideo emergency calls on them.
- **MCVideo private emergency alert (MVPEA) state:** this is an internal state of the MCVideo client which in conjunction with the MCVideo emergency private call state aids in managing the MCVideo emergency state and related actions.
- **MCVideo emergency private call (MVEPC) state:** this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.
- **In-progress emergency private call (IPEPC) state:** indicates whether or not there is an MCVideo emergency private call in-progress for the two participants. This state is managed by the controlling MCVideo function. All private calls originated between these two participants when in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator is in an MCVideo emergency state.
- **MCVideo emergency private priority (MVEPP) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency private call state of the private call managed by the controlling MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency private priority state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency private call and is not in the MCVideo emergency state, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency private priority state of the private call (i.e., the two participants), it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

NOTE: The above states and their transitions are described in Annex G.

6.2.6.3 Test description

6.2.6.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- UE (MCVideo client) is set for manual commencement mode answering
- receive emergency calls; MCVideo service setting for answering the call is set to manual commencement mode (3GPP TS 24.483 [12], /<x>/<x>/Common/PrivateCall/AutoCommence="false", /<x>/<x>/Common/PrivateCall/ManualCommence="true")
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered as the MCVideo User, with the Server as an active user at the Client.

6.2.6.3.2 Test procedure sequence

Table 6.2.6.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages exchanged.	-	-	-	-
1	The SS (MCVideo Server) sends a SIP INVITE message to request establishment of a MCVideo private emergency call with force of Automatic Commencement Mode without Transmission Control.	<--	SIP INVITE	-	-
-	EXCEPTION: Step 2a1 describes behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE responds to a SIP INVITE message with a SIP 100 (Trying) message.			-	-

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
2a1	The UE (MCVideo Client) sends a SIP 100 (Trying) message.	-->	SIP 100 (Trying)	-	-
3	Check: Does the UE (MCVideo client) send a SIP 200 (OK)?	-->	SIP 200 (OK)	1	P
4	The SS (MCVideo Server) sends a SIP ACK acknowledging the SIP 200 (OK) from the UE (MCVideo Client).	<--	SIP ACK	-	-
5	Check: Does the UE (MCVideo client) notify the user about the emergency call establishment? NOTE 1: This is expected to be done via a suitable implementation dependent MMI. NOTE 2: The display information may include - indication for a request for an MCVideo private call - the MCVideo ID of the originator of the MCVideo private call.	-	-	1	P
6	Void-	-	-	-	-
7	Make the UE (MCVideo Client) terminate the call. NOTE: This is expected to be done via a suitable implementation dependent MMI.	-	-	-	-
8	Check: Does the UE (MCVideo Client) send a SIP BYE request to terminate the call?	-->	SIP BYE	2	P
9	The SS (MCVideo Server) sends a SIP 200 (OK) in response.	<--	SIP 200 (OK)	-	-
10	Wait for 5 sec to capture any not allowed behaviour.	-	-	-	-
-	EXCEPTION: SS releases the E-UTRA connection	-	-	-	-

6.2.6.3.3 Specific message contents

Table 6.2.6.3.3-1: SIP INVITE (Step 1, Table 6.2.6.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.5.2-1, conditions MCVIDEO, PRIVATE-CALL, AUTO COMMENCEMENT MODE				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 6.2.6.3.3-2			

Table 6.2.6.3.3-2: MCVideo-INFO in SIP INVITE (Table 6.2.6.3.3-1)

Derivation Path: TS 36.579-1, Table 5.5.3.2.2-1, conditions MCVIDEO, PRIVATE-CALL, ON-NETWORK

Table 6.2.6.3.3-3: SIP 200 (OK) (Step 3, Table 6.2.6.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO, PRIVATE-CALL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.2.6.3.3-2			

Table 6.2.6.3.3-4: Void

Table 6.2.6.3.3-5: SIP BYE (Step 8, Table 6.2.6.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL
--

Table 6.2.6.3.3-6: SIP 200 (OK) (Step 9, Table 6.2.6.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

6.2.7 On-network / Private Call / On-demand / Manual Commencement Mode / Without Transmission Control / Client Originated (CO)

6.2.7.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service and authorised to initiate
private calls with manual commencement }
ensure that {
  when { the MCVideo User requests the establishment of an MCVideo On-demand Manual Commencement
private call without Transmission Control }
  then { UE (MCVideo Client) requests On-demand Manual Commencement Mode private call
establishment without Transmission Control by sending a SIP INVITE message not offering a media-
level section for a media-transmission control entity and, after indication from the MCVideo Server
that the call was established the UE notifies the user and, does not apply Transmission Control }
}

```

(2)

```

with { UE (MCVideo Client) having established an MCVideo on-demand Manual Commencement private call
without Transmission Control }
ensure that {
  when { the UE (MCVideo User) requests to cancel the ongoing MCVideo on-demand Manual Commencement
private call }
  then { UE (MCVideo Client) sends a SIP BYE request and after receiving a SIP 200 (OK) response
leaves the MCVideo session }
}

```

6.2.7.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281 clauses 10.2.2.2.2, 10.2.2.3.1.1, 4.6.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.2]

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

The MCVideo client:

- 1) may reject the SIP INVITE request if any of the following conditions are met:

- a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];
- b) MCVideo client does not have enough resources to handle the call; or
- c) any other reason outside the scope of this specification;

otherwise, continue with the rest of the steps.

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

- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorized to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this subclause;
- 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
- 4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];
 - c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
 - d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in subclause 4.4; and
 - e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 2: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

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

- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.1 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client is willing to answer the call with automatic commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.1 if either of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Upon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVideo client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVideo client:

- 1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and
- 2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVideo client:

- 1) shall follow the procedures in subclause 10.2.5.2.

[TS 24.281, clause 10.2.2.3.1.1]

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "private", the participating MCVideo function:

- 1) may reject the SIP INVITE request depending on the value of the Resource-Priority header field if the Resource-Priority header field is included in the received SIP INVITE request according to rules and procedures specified in IETF RFC 4412 [33] and shall not continue with the rest of the steps;
- 2) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and shall not continue with the rest of the steps;

NOTE 1: If the received SIP INVITE request contains an emergency indication set to a value of "true", the participating MCVideo function can choose to accept the request.

NOTE 2: If the received SIP INVITE request contains an emergency indication set to a value of "true", the participating MCVideo function can choose to allow an exception to the limit on the number of private calls and accept the request.

- 3) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request and shall authorise the user;

NOTE 3: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in subclause 7.3.

- 4) if the participating MCVideo function cannot find a binding between the public user identity and an MCVideo ID or if the validity period of an existing binding has expired, then the participating MCVideo function shall

reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text set to "141 user unknown to the participating function" in a Warning header field as specified in subclause 4.4, and shall not continue with any of the remaining steps;

- 5) shall:
 - a) if the <session-type> is set to "private", determine that the call is a private call;
- 6) if the call is a:
 - a) private call, determine the public service identity of the controlling MCVideo function for the private call service associated with the originating user's MCVideo ID identity;
- 7) if the participating MCVideo function is unable to identify the controlling MCVideo function for the private call service, it shall reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text "142 unable to determine the controlling function" in a Warning header field as specified in subclause 4.4, and shall not continue with any of the remaining steps;
- 8) if the incoming SIP INVITE request does not contain an application/resource-lists MIME body, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- 9) if the call is a private call and the incoming SIP INVITE request contains an application/resource-lists MIME body with more than one <entry> element, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- 10) if the <allow-private-call> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), indicating that the user identified by the MCVideo ID is not authorized to initiate private calls, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response, with warning text set to "107 user not authorized to make private calls" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- 11) if the call is a private call and:
 - a) if the received SIP INVITE request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] with the value "Auto" and the <allow-automatic-commencement> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]) indicating that the user identified by the MCVideo ID is not authorized to initiate private call with automatic commencement, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "125 user not authorized to make private call with automatic commencement" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
 - b) if the received SIP INVITE request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] with the value "Manual" and the <allow-manual-commencement> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), indicating that the user identified by the MCVideo ID is not authorized to initiate private call with manual commencement, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "126 user not authorized to make private call with manual commencement" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
 - c) if the <PrivateCall> element exists in the MCVideo user profile document with one more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]) and:
 - i) if the "uri" attribute of the <entry> element of the application/resource-lists MIME body does not match with one of the <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]); and

- ii) if configuration is not set in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) that allows the MCVideo user to make a private call to users not contained within the <entry> elements of the <PrivateCall> element;

then:

- i) shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "144 user not authorized to call this particular user" in a Warning header field as specified in subclause 4.4 and shall not continue with the rest of the steps;
- 12) shall validate the media parameters and if the MCVideo video media codec is not offered in the "SIP INVITE request for originating participating MCVideo function" shall reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;
- 13) shall generate a SIP INVITE request as specified in subclause 6.3.2.1.3 with the following clarifications:
- a) if the conditions in step 12) above were executed and the participating MCVideo function determined that the "uri" attribute of only one of the <entry> elements of the application/resource-lists MIME body matched with an <entry> element of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) then the <session-type> in the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request generated in subclause 6.3.2.1.3 is set to "private"; and
 - b) if the conditions in step 12) above were executed, then only the <entry> element(s) of the application/resource-lists MIME body that have a "uri" attribute that matched with an <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) are included in the application/resource-lists MIME body in the SIP INVITE request generated in subclause 6.3.2.1.3;
- 14) shall set the Request-URI to the public service identity of the controlling MCVideo function hosting the private call service as determined by step 6);
- 15) shall set the <mcvideo-calling-user-id> element in an application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;
- 16) if the call is a private call and:
- a) if a Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Manual", shall not include a Priv-Answer-Mode header field in the outgoing SIP INVITE request;
 - b) if the <allow-force-auto-answer> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), and the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Auto", shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "143 not authorized to force auto answer" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
 - c) if the <allow-force-auto-answer> element of the <ruleset> element is present in the MCVideo user profile document with the value "true" (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function, and the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Auto", shall include the Priv-Answer-Mode header field set to a value of "Auto" in the outgoing SIP INVITE request;
 - d) if a Priv-Answer-Mode header field containing the value of "Auto" has not been included in the outgoing SIP INVITE request as specified in step 17) above and the incoming "SIP INVITE request for originating participating MCVideo function" contained an Answer-Mode header field as specified in IETF RFC 5373 [27], then shall populate the Answer-Mode header field of the outgoing SIP INVITE request with the contents of the Answer-Mode header field from the incoming "SIP INVITE request for originating participating MCVideo function";
- 17) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for originating participating MCVideo function", as specified in subclause 6.3.2.1.1.1;

18) shall include a Resource-Priority header field according to rules and procedures of 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field if included in the SIP INVITE request from the MCVideo client; and

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

Upon receiving a SIP 180 (Ringing) response, the participating MCVideo function:

- 1) shall generate a SIP 180 (Ringing) response to the SIP INVITE request as specified in the subclause 6.3.2.1.5.1;
- 2) shall include the P-Asserted-Identity header field as received in the incoming SIP 180 (Ringing) response;
- 3) shall include Warning header field(s) received in the incoming SIP 180 (Ringing) response; and
- 4) shall forward the SIP 180 (Ringing) response to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response, the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as specified in the subclause 6.3.2.1.5.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer as specified in the subclause 6.3.2.1.2.1;
- 3) shall include Warning header field(s) received in the incoming SIP 200 (OK) response;
- 4) shall include the P-Asserted-Identity header field received in the incoming SIP 200 (OK) response into the outgoing SIP 200 (OK) response;
- 5) shall include an MCVideo session identity mapped to the MCVideo session identity provided in the Contact header field of the received SIP 200 (OK) response;
- 6) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];
- 7) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 8) shall start the SIP session timer according to rules and procedures of IETF RFC 4028 [23].

The participating MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [11].

[TS 24.281, clause 4.6.2]

MCVideo emergency private calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency private call functionalities are specified in the present document:

- MCVideo emergency private call origination with optional MCVideo emergency alert initiation;
- upgrade of an MCVideo private call to an MCVideo emergency private; and
- cancellation of the MCVideo emergency private call priority.

Key aspects of MCVideo emergency private calls include:

- adjusted EPS bearer priority for both participants whether or not they are both in an emergency condition (i.e. both have their MCVideo emergency state set). This is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43];
- the initiator of the MCVideo emergency private call can override the other MCVideo user in the MCVideo emergency private call unless that user also has their MCVideo emergency state set;
- restoration of normal EPS bearer priority to the call according to system policy (e.g., configured time limit for the emergency priority of an MCVideo emergency private call or cancellation of the emergency condition of the private call);
- restoration of normal transmission control priority participants when the emergency elevated priority is cancelled;

- requires the MCVideo user to be authorized to either originate or cancel an MCVideo emergency private call;
- requires the targeted MCVideo user to be authorized to receive an MCVideo emergency private call;
- requests to originate MCVideo emergency private calls may also include an indication of an MCVideo emergency alert; and
- the originator of the MCVideo emergency private call can request that the call use either manual or automatic commencement mode.

There are a number of states that are key in managing these aspects of MCVideo emergency private calls, which include:

- **MCVideo emergency state (MVES):** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorized MCVideo user. While the MCVideo emergency state is set on the client, all MCVideo group and private calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorized for MCVideo emergency calls on them.
- **MCVideo private emergency alert (MVPEA) state:** this is an internal state of the MCVideo client which in conjunction with the MCVideo emergency private call state aids in managing the MCVideo emergency state and related actions.
- **MCVideo emergency private call (MVEPC) state:** this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.
- **In-progress emergency private call (IPEPC) state:** indicates whether or not there is an MCVideo emergency private call in-progress for the two participants. This state is managed by the controlling MCVideo function. All private calls originated between these two participants when in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator is in an MCVideo emergency state.
- **MCVideo emergency private priority (MVEPP) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency private call state of the private call managed by the controlling MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency private priority state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency private call and is not in the MCVideo emergency state, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency private priority state of the private call (i.e., the two participants), it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

NOTE: The above states and their transitions are described in Annex G.

6.2.7.3 Test description

6.2.7.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCPTT User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble
 - The UE is in E-UTRA Registered, Idle Mode state.
 - The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.2.7.3.2 Test procedure sequence

Table 6.2.7.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE (MCVideo User) request the establishment of an MCVideo private call, manual commencement mode, and no transmission control. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
-	EXCEPTION: The E-UTRA/EPC related actions which step 1 above will trigger are described in TS 36.579-1 [2], subclause 5.4.3A 'Generic Test Procedure for MCVideo CO communication in E-UTRA'. The test sequence below shows only the MCVideo relevant messages being exchanged.	-	-	-	-
2	Check: Does the UE (MCVideo client) send an initial SIP INVITE request not offering a media-level section for a media-transmission control entity requesting the establishment of a MCVideo private call, Manual Commencement Mode?	-->	SIP INVITE	1	P
3	The SS (MCVideo Server) sends SIP 180 (Ringing).	<--	SIP 180 (Ringing)	-	-
4	The SS (MCVideo server) sends SIP 200 (OK). SSRC identifier is assigned.	<--	SIP 200 (OK)	-	-
5	The UE (MCVideo Client) acknowledges the SIP 200 (OK) with a SIP ACK.	-->	SIP ACK		
6	Check: Does the UE (MCVideo client) notify the user that the call has been successfully established? NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	1	P
7	Make the UE (MCVideo User) request termination of the MCVideo private call. NOTE: This action is expected to be done via a suitable implementation-dependent MMI.	-	-	-	-
8	Check: Does the UE (MCVideo client) send a SIP BYE request?	-->	SIP BYE	2	P
9	The SS (MCVideo server) sends SIP 200 (OK).	<--	SIP 200 (OK)	-	-
10	Wait for 5 sec to capture any not allowed behaviour.	-	-	-	-
-	EXCEPTION: SS releases the E-UTRA connection.	-	-	-	-

6.2.7.3.3 Specific message contents

Table 6.2.7.3.3-1: SIP INVITE (Step 2, Table 6.2.7.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, conditions MCVIDEO, PRIVATE-CALL				
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 6.2.7.3.3-2			

Table 6.2.7.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.7.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL

Table 6.2.7.3.3-3: SIP 200 (OK) (Steps 4, Table 6.2.7.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, conditions MCVIDEO, INVITE-RSP				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-header				
MIME-part-body	MCVideo-Info as described in Table 6.2.1.3.3-2			

Table 6.2.7.3.3-4: SIP BYE (Step 8, Table 6.2.7.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL
--

Table 6.2.7.3.3-5: SIP 200 (OK) (Step 9, Table 6.2.7.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	"0"	No message body included		

6.2.8 On-network / Private Call / On-demand / Manual Commencement Mode / Without Transmission Control / Client Terminated (CT)

6.2.8.1 Test Purpose (TP)

(1)

```

with { UE (MCVideo Client) registered and authorised for MCVideo Service including authorisation to
receive a MCVideo private call }
ensure that {
  when { the UE (MCVideo Client) receives a request for establishment of an MCVideo private call,
On-demand Manual Commencement Mode without Transmission Control }
  then { UE (MCVideo Client) notifies the User for the incoming call responding to the Server with
a SIP 183 (Ringing) message, and, after the User accepts the call sends to the Server a SIP 200 (OK)
message and does not apply Transmission Control }
}

```

(2)

```

with { UE (MCVideo Client) having an ongoing On-demand Pre-arranged Group Call with Manual
Commencement Mode }
ensure that {
  when { the MCVideo User needs to terminate the ongoing MCVideo Group Call }
  then { the UE (MCVideo Client) sends a SIP BYE request and the SS (MCVideo Server) responds with
a SIP 200 (OK) and ends the MCVideo session }
}

```

6.2.8.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 24.281, clauses 10.2.2.2.2, 10.2.2.3.1.1, 6.2.3.2.1, and 4.6.2. The following represents a copy/paste extraction of the requirements relevant to the test purpose; any references within the copy/paste text should be understood within the scope of the core spec they have been copied from. Unless otherwise stated these are Rel-14 requirements.

[TS 24.281, clause 10.2.2.2.2]

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

The MCVideo client:

- 1) may reject the SIP INVITE request if any of the following conditions are met:
 - a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];
 - b) MCVideo client does not have enough resources to handle the call; or
 - c) any other reason outside the scope of this specification;

otherwise, continue with the rest of the steps.

- NOTE 1: If the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function can choose to accept the request.
- 2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in subclause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorized to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this subclause;
 - 3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":
 - a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency private call and:
 - i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and
 - ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and
 - b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;
 - 4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:
 - a) shall extract the MCVideo ID of the originating MCVideo client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];
 - b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];

- c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];
- d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in subclause 4.4; and
- e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:
 - i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and
 - ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 2: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

- 5) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];
- 6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;
- 7) shall perform the automatic commencement procedures specified in subclause 6.2.3.1.1 if one of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client is willing to answer the call with automatic commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and
- 8) shall perform the manual commencement procedures specified in subclause 6.2.3.2.1 if either of the following conditions are met:
 - a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode;
 - b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; or
 - c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Upon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVideo client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVideo client:

- 1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and
- 2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVideo client:

- 1) shall follow the procedures in subclause 10.2.5.2.

[TS 24.281, clause 10.2.2.3.1.1]

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "private", the participating MCVideo function:

- 1) may reject the SIP INVITE request depending on the value of the Resource-Priority header field if the Resource-Priority header field is included in the received SIP INVITE request according to rules and procedures specified in IETF RFC 4412 [33] and shall not continue with the rest of the steps;
- 2) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and shall not continue with the rest of the steps;

NOTE 1: If the received SIP INVITE request contains an emergency indication set to a value of "true", the participating MCVideo function can choose to accept the request.

NOTE 2: If the received SIP INVITE request contains an emergency indication set to a value of "true", the participating MCVideo function can choose to allow an exception to the limit on the number of private calls and accept the request.

- 3) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request and shall authorise the user;

NOTE 3: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in subclause 7.3.

- 4) if the participating MCVideo function cannot find a binding between the public user identity and an MCVideo ID or if the validity period of an existing binding has expired, then the participating MCVideo function shall reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text set to "141 user unknown to the participating function" in a Warning header field as specified in subclause 4.4, and shall not continue with any of the remaining steps;
- 5) shall:
 - a) if the <session-type> is set to "private", determine that the call is a private call;
- 6) if the call is a:
 - a) private call, determine the public service identity of the controlling MCVideo function for the private call service associated with the originating user's MCVideo ID identity;
- 7) if the participating MCVideo function is unable to identify the controlling MCVideo function for the private call service, it shall reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text "142 unable to determine the controlling function" in a Warning header field as specified in subclause 4.4, and shall not continue with any of the remaining steps;
- 8) if the incoming SIP INVITE request does not contain an application/resource-lists MIME body, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- 9) if the call is a private call and the incoming SIP INVITE request contains an application/resource-lists MIME body with more than one <entry> element, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- 10) if the <allow-private-call> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), indicating that the user identified by the MCVideo ID is not authorized to initiate private calls, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response, with warning text set to "107 user not authorized to make private calls" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- 11) if the call is a private call and:
 - a) if the received SIP INVITE request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] with the value "Auto" and the <allow-automatic-commencement> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo

function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]) indicating that the user identified by the MCVideo ID is not authorized to initiate private call with automatic commencement, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "125 user not authorized to make private call with automatic commencement" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;

- b) if the received SIP INVITE request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] with the value "Manual" and the <allow-manual-commencement> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), indicating that the user identified by the MCVideo ID is not authorized to initiate private call with manual commencement, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "126 user not authorized to make private call with manual commencement" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
- c) if the <PrivateCall> element exists in the MCVideo user profile document with one more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]) and:
 - i) if the "uri" attribute of the <entry> element of the application/resource-lists MIME body does not match with one of the <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]); and
 - ii) if configuration is not set in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) that allows the MCVideo user to make a private call to users not contained within the <entry> elements of the <PrivateCall> element;

then:

- i) shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "144 user not authorized to call this particular user" in a Warning header field as specified in subclause 4.4 and shall not continue with the rest of the steps;
- 12) shall validate the media parameters and if the MCVideo video media codec is not offered in the "SIP INVITE request for originating participating MCVideo function" shall reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;
- 13) shall generate a SIP INVITE request as specified in subclause 6.3.2.1.3 with the following clarifications:
- a) if the conditions in step 12) above were executed and the participating MCVideo function determined that the "uri" attribute of only one of the <entry> elements of the application/resource-lists MIME body matched with an <entry> element of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) then the <session-type> in the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request generated in subclause 6.3.2.1.3 is set to "private"; and
 - b) if the conditions in step 12) above were executed, then only the <entry> element(s) of the application/resource-lists MIME body that have a "uri" attribute that matched with an <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) are included in the application/resource-lists MIME body in the SIP INVITE request generated in subclause 6.3.2.1.3;
- 14) shall set the Request-URI to the public service identity of the controlling MCVideo function hosting the private call service as determined by step 6);
- 15) shall set the <mcvideo-calling-user-id> element in an application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;
- 16) if the call is a private call and:
- a) if a Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Manual", shall not include a Priv-Answer-Mode header field in the outgoing SIP INVITE request;

- b) if the <allow-force-auto-answer> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), and the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Auto", shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "143 not authorized to force auto answer" in a Warning header field as specified in subclause 4.4, and shall not continue with the rest of the steps;
 - c) if the <allow-force-auto-answer> element of the <ruleset> element is present in the MCVideo user profile document with the value "true" (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function, and the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Auto", shall include the Priv-Answer-Mode header field set to a value of "Auto" in the outgoing SIP INVITE request;
 - d) if a Priv-Answer-Mode header field containing the value of "Auto" has not been included in the outgoing SIP INVITE request as specified in step 17) above and the incoming "SIP INVITE request for originating participating MCVideo function" contained an Answer-Mode header field as specified in IETF RFC 5373 [27], then shall populate the Answer-Mode header field of the outgoing SIP INVITE request with the contents of the Answer-Mode header field from the incoming "SIP INVITE request for originating participating MCVideo function";
- 17) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for originating participating MCVideo function", as specified in subclause 6.3.2.1.1.1;
- 18) shall include a Resource-Priority header field according to rules and procedures of 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field if included in the SIP INVITE request from the MCVideo client; and
- 19) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11].

Upon receiving a SIP 180 (Ringing) response, the participating MCVideo function:

- 1) shall generate a SIP 180 (Ringing) response to the SIP INVITE request as specified in the subclause 6.3.2.1.5.1;
- 2) shall include the P-Asserted-Identity header field as received in the incoming SIP 180 (Ringing) response;
- 3) shall include Warning header field(s) received in the incoming SIP 180 (Ringing) response; and
- 4) shall forward the SIP 180 (Ringing) response to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response, the participating MCVideo function:

- 1) shall generate a SIP 200 (OK) response as specified in the subclause 6.3.2.1.5.2;
- 2) shall include in the SIP 200 (OK) response an SDP answer as specified in the subclause 6.3.2.1.2.1;
- 3) shall include Warning header field(s) received in the incoming SIP 200 (OK) response;
- 4) shall include the P-Asserted-Identity header field received in the incoming SIP 200 (OK) response into the outgoing SIP 200 (OK) response;
- 5) shall include an MCVideo session identity mapped to the MCVideo session identity provided in the Contact header field of the received SIP 200 (OK) response;
- 6) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];
- 7) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and
- 8) shall start the SIP session timer according to rules and procedures of IETF RFC 4028 [23].

The participating MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [11].

[TS 24.281, clause 6.2.3.2.1]

When performing the manual commencement mode procedures:

- 1) if the MCVideo user declines the MCVideo session invitation the MCVideo client shall send a SIP 480 (Temporarily Unavailable) response towards the MCVideo server with the warning text set to: "110 user declined the call invitation" in a Warning header field as specified in subclause 4.4, and not continue with the rest of the steps in this subclause.

The MCVideo client:

- 1) shall accept the SIP INVITE request and generate a SIP 180 (Ringing) response according to rules and procedures of 3GPP TS 24.229 [11];
- 2) shall include the option tag "timer" in a Require header field of the SIP 180 (Ringing) response;
- 3) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 180 (Ringing) response;
- 4) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 180 (Ringing) response; and
- 5) shall send the SIP 180 (Ringing) response to the MCVideo server.

When sending the SIP 200 (OK) response to the incoming SIP INVITE request, the MCVideo client shall follow the procedures in subclause 6.2.3.1.1.

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

[TS 24.281, clause 4.6.2]

MCVideo emergency private calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency private call functionalities are specified in the present document:

- MCVideo emergency private call origination with optional MCVideo emergency alert initiation;
- upgrade of an MCVideo private call to an MCVideo emergency private; and
- cancellation of the MCVideo emergency private call priority.

Key aspects of MCVideo emergency private calls include:

- adjusted EPS bearer priority for both participants whether or not they are both in an emergency condition (i.e. both have their MCVideo emergency state set). This is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43];
- the initiator of the MCVideo emergency private call can override the other MCVideo user in the MCVideo emergency private call unless that user also has their MCVideo emergency state set;
- restoration of normal EPS bearer priority to the call according to system policy (e.g., configured time limit for the emergency priority of an MCVideo emergency private call or cancellation of the emergency condition of the private call);
- restoration of normal transmission control priority participants when the emergency elevated priority is cancelled;
- requires the MCVideo user to be authorized to either originate or cancel an MCVideo emergency private call;
- requires the targeted MCVideo user to be authorized to receive an MCVideo emergency private call;
- requests to originate MCVideo emergency private calls may also include an indication of an MCVideo emergency alert; and
- the originator of the MCVideo emergency private call can request that the call use either manual or automatic commencement mode.

There are a number of states that are key in managing these aspects of MCVideo emergency private calls, which include:

- **MCVideo emergency state (MVES):** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorized MCVideo user. While the MCVideo emergency state is set on the client, all MCVideo group and private calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorized for MCVideo emergency calls on them.
- **MCVideo private emergency alert (MVPEA) state:** this is an internal state of the MCVideo client which in conjunction with the MCVideo emergency private call state aids in managing the MCVideo emergency state and related actions.
- **MCVideo emergency private call (MVEPC) state:** this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.
- **In-progress emergency private call (IPEPC) state:** indicates whether or not there is an MCVideo emergency private call in-progress for the two participants. This state is managed by the controlling MCVideo function. All private calls originated between these two participants when in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator is in an MCVideo emergency state.
- **MCVideo emergency private priority (MVEPP) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency private call state of the private call managed by the controlling MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency private priority state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency private call and is not in the MCVideo emergency state, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency private priority state of the private call (i.e., the two participants), it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

NOTE: The above states and their transitions are described in Annex G.

6.2.8.3 Test description

6.2.8.3.1 Pre-test conditions

System Simulator:

- SS (MCVideo server)
- For the underlying "transport bearer" over which the SS and the UE will communicate Parameters are set to the default parameters for the basic E-UTRA Single cell network scenarios, as defined in TS 36.508 [24] clause 4.4. The simulated Cell 1 shall belong to PLMN1 (the PLMN specified for MCVideo operation in the MCVideo configuration document).

IUT:

- UE (MCVideo client)
- The test USIM set as defined in TS 36.579-1 [2], subclause 5.5.10 is inserted.

Preamble:

- The UE has performed the Generic Test Procedure for MCVideo UE registration as specified in TS 36.579-1 [2], subclause 5.4.2A.
- The MCVideo User performs the Generic Test Procedure for MCVideo Authorization/Configuration and Key Generation as specified in TS 36.579-1 [2], subclause 5.3.2A.
- UE States at the end of the preamble:
 - The UE is in E-UTRA Registered, Idle Mode state.

- The MCVideo Client Application has been activated and User has registered-in as the MCVideo User with the Server as active user at the Client.

6.2.8.3.2 Test procedure sequence

Table 6.2.8.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The E-UTRA/EPC actions which are related to the MCVIDEO call establishment are described in TS 36.579-1 [2], subclause 5.4.4A Generic Test Procedure for MCVideo CT communication in E-UTRA'. The test sequence below shows only the MCVIDEO relevant messages exchanged.	-	-	-	-
1	SS initiates an On-network / Private Call / On-demand / Manual Commencement Mode / Without Transmission Control	<--	SIP INVITE	-	-
-	EXCEPTION: Steps 2a1 through 2a4 describe behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that take place if the UE responds to a SIP INVITE prior to the MCVIDEO user's acknowledgment.	-	-	-	-
2a1	The UE (MCVIDEO Client) responds with a SIP 100 Trying provisional response.	-->	SIP 100 (Trying)	-	-
2a2	The UE (MCVIDEO Client) respond with a SIP 183 (Session Progress)?	-->	SIP 183 (Session Progress)	-	-
2a3	The SS responds to the SIP 183 (Session Progress) message with a SIP PRACK message	<--	SIP PRACK	-	-
2a4	The UE (MCVIDEO Client) acknowledges the SIP PRACK message with SIP 200 (OK) message	-->	SIP 200 (OK)	-	-
-	EXCEPTION: Steps 3a1 through 3a3 describe behaviour that depends on the UE implementation; the "lower case letter" identifies a step sequence that takes place if the UE responds to a SIP INVITE prior to the MCVIDEO user's acknowledgment by sending a SIP 180 (Ringing) message.	-	-	-	-
3a1	Check: Does the UE (MCVIDEO Client) respond with a SIP 180 (Ringing) message?	-->	SIP 180 (Ringing)	1	P
3a2	The SS shall send a SIP PRACK message only if the SIP 180 (Ringing) response contains 100rel option tag within the Require header.	<--	SIP PRACK	-	-
3a3	The UE (MCVIDEO Client) acknowledges the SIP PRACK message with SIP 200 (OK) message	-->	SIP 200 (OK)	-	-
4	Make the MCVIDEO User answer the call NOTE: This is expected to be done via a suitable implementation dependent MMI command.	-	-	-	-
5	Check: Does the UE (MCVIDEO Client) respond to the original SIP INVITE message with a SIP 200 (OK) message?	-->	SIP 200 (OK)	1	P
6	The SS acknowledges the receipt of the SIP 200 (OK) message for the SIP INVITE message.	<--	SIP ACK	-	-
7	Make the UE request to end the call. NOTE: This is expected to be done via a suitable implementation dependent MMI command.	-	-	-	-
8	Check: Does the UE (MCVideo Client) send a SIP BYE message?	-->	SIP BYE	2	P

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
9	The SS (MCVideo Server) responds with a SIP 200 (OK) message	<--	SIP 200 (OK)	-	-
10	Wait for 5 sec to capture any not allowed behaviour.	-	-	-	-
-	EXCEPTION: SS releases the E-UTRA connection	-	-	-	-

6.2.8.3.3 Specific message contents

Table 6.2.8.3.3-1: SIP INVITE (Step 1, Table 6.2.8.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.5.2-1, conditions MCVIDEO, PRIVATE-CALL, MANUAL				
Information Element	Value/remark	Comment	Reference	Condition
Message-body				
MIME body part		MCVideo		
MIME-part-headers				
MIME-part-body	MCVideo-Info as described in Table 6.2.8.3.3-2			

Table 6.2.8.3.3-2: MCVideo-Info in SIP INVITE (Table 6.2.8.3.3-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.5.1-1, condition PRIVATE-CALL

Table 6.2.8.3.3-3: SIP 183 (Session Progress) (Step 2a2, Table 6.2.8.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.16.3.1, condition MANUAL				
Information Element	Value/remark	Comment	Reference	Condition
P-Answer-State	if present			
value	"unconfirmed"			

Table 6.2.8.3.3-4: SIP 200 (OK) (Step 2a4, 3a3, 5, Table 6.2.8.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, 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 6.2.8.3.3-2			

Table 6.2.8.3.3-5: SIP BYE (Step 8, Table 6.2.8.3.2-1)

Derivation Path: TS 36.579-1, Table 5.5.2.2-1, condition MO_CALL
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Table 6.2.8.3.3-6: SIP 200 (OK) (Step 9, Table 6.2.8.3.2-1)

Derivation Path: TS 36.579-1 [2], Table 5.5.2.17.1.2-1, condition MCVIDEO				
Information Element	Value/remark	Comment	Reference	Condition
Content-Type	not present			
Content-Length				
value	'0'	No message body included		

6.3 Emergency Alert

This feature is not specified in the present version of the document.

7 Off-Network Test Scenarios

This feature is not specified in the present version of the document.

Annex A (informative): Change history

Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New version
2018-08	RAN5#80	R5-184607	-	-	-	Introduction of TS 36.579-6	0.0.2
2018-08	RAN5#80	R5-184990	-	-	-	New Test Case for 36.579-6 - 6.1.1.8	0.0.3
2018-08	RAN5#80	R5-185142	-	-	-	Draft TS 36.579-6 v003	0.0.3
2019-06	RAN5#83	R5-195214	-	-	-	New TC for 36.579-6 - 6.1.1.3 Group Call Manual CO	0.0.4
2019-06	RAN5#83	R5-195215	-	-	-	New TC for 36.579-6 - 6.1.1.4 Group Call Manual CT	0.0.4
2019-06	RAN5#83	R5-194733	-	-	-	Draft TS 36.579-6 v004	0.0.4
2019-09	RAN5#84	R5-196351	-	-	-	Draft TS 36.579-6 v010	0.1.0
2019-11	RAN5#85	R5-198828	-	-	-	Draft TS 36.579-6 v0.2.1	0.2.1
2020-05	RAN5#87	R5-202050	-	-	-	Draft TS 36.579-6 v0.3.0	0.3.0
2020-07	RAN#88	RP-200716	-	-	-	Draft version for information purposes to the RAN Plenary	1.0.0
2020-08	RAN5#88	R5-203528	-	-	-	draft TS 36.579-6 v1.1.0	1.1.0
2020-09	RAN#89	RP-201796	-	-	-	Draft version for approval to move the spec under revision control to the RAN Plenary	2.0.0
2020-09	RAN#89	-	-	-	-	upgraded to v14.0.0 with small editorial changes	14.0.0
2021-03	RAN#91	R5-211269	0002	-	F	Correction to MCVideo Test Case 6.2.6	14.1.0
2021-03	RAN#91	R5-211546	0001	1	F	Correction to MCVideo Test Case 6.1.1.9	14.1.0
2021-06	RAN#92	R5-212357	0005	-	F	Correction to MCVideo Test Case 6.1.1.1	14.2.0
2021-06	RAN#92	R5-212358	0006	-	F	Correction to MCVideo Test Case 6.1.1.2	14.2.0
2021-06	RAN#92	R5-212359	0007	-	F	Correction to MCVideo Test Case 6.1.1.3	14.2.0
2021-06	RAN#92	R5-212360	0008	-	F	Correction to MCVideo Test Case 6.1.1.4	14.2.0
2021-06	RAN#92	R5-212361	0009	-	F	Correction to MCVideo Test Case 6.1.1.5	14.2.0
2021-06	RAN#92	R5-212362	0010	-	F	Correction to MCVideo Test Case 6.1.1.6	14.2.0
2021-06	RAN#92	R5-212363	0011	-	F	Correction to MCVideo Test Case 6.1.1.7	14.2.0
2021-06	RAN#92	R5-212364	0012	-	F	Correction to MCVideo Test Case 6.1.1.8	14.2.0
2021-06	RAN#92	R5-212365	0013	-	F	Correction to MCVideo Test Case 6.1.1.9	14.2.0
2021-06	RAN#92	R5-212366	0014	-	F	Correction to MCVideo Test Case 6.1.1.10	14.2.0
2021-06	RAN#92	R5-212367	0015	-	F	Correction to MCVideo Test Case 6.1.1.11	14.2.0

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