

# ETSI TS 124 281 V15.16.0 (2026-03)



TECHNICAL SPECIFICATION

**LTE;  
Mission Critical Video (MCVideo) signalling control;  
Protocol specification  
(3GPP TS 24.281 version 15.16.0 Release 15)**

get full document from [standards.iteh.ai](https://standards.iteh.ai)



---

**Reference**

RTS/TSGC-0124281 vfg0

---

**Keywords**

LTE

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° w061004871

---

**Important notice**

The present document can be downloaded from the  
[ETSI Search & Browse Standards](#) application.

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format on [ETSI deliver](#) repository.

Users should be aware that the present document may be revised or have its status changed, this information is available in the [Milestones listing](#).

If you find errors in the present document, please send your comments to the relevant service listed under [Committee Support Staff](#).

If you find a security vulnerability in the present document, please report it through our [Coordinated Vulnerability Disclosure \(CVD\)](#) program.

---

**Notice of disclaimer & limitation of liability**

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

---

**Copyright Notification**

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2026.  
All rights reserved.

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the [ETSI IPR online database](#).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™**, **LTE™** and **5G™** logo are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

---

# Legal Notice

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

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found at [3GPP to ETSI numbering cross-referencing](#).

---

# Modal verbs terminology

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

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

# Contents

Intellectual Property Rights .....	2
Legal Notice .....	2
Modal verbs terminology.....	2
Foreword.....	18
1 Scope .....	19
2 References .....	19
3 Definitions, symbols and abbreviations .....	22
3.1 Definitions .....	22
3.2 Symbols.....	24
3.3 Abbreviations .....	24
4 General .....	25
4.1 MCVideo overview .....	25
4.2 URI and address assignments.....	26
4.3 MCVideo media .....	26
4.4 Warning header field .....	26
4.4.1 General.....	26
4.4.2 Warning texts.....	26
4.5 MCVideo session identity .....	30
4.6 MCVideo priority calls and alerts .....	31
4.6.1 MCVideo emergency group calls .....	31
4.6.2 MCVideo emergency private calls.....	32
4.6.3 MCVideo emergency alerts .....	33
4.6.4 MCVideo imminent peril group call.....	34
4.7 Communication security.....	35
4.7.1 Media security .....	35
4.7.2 Signalling security .....	36
4.8 Protection of sensitive application data .....	36
4.9 MCVideo client ID.....	37
4.10 Off-network MCVideo .....	38
5 Functional entities .....	38
5.1 General .....	38
5.2 MCVideo client.....	38
5.3 MCVideo server .....	39
5.3.1 General.....	39
5.3.2 Functional connectivity models .....	40
5.3.3 Failure case .....	41
5.4 MCVideo UE-to-network relay.....	41
6 Common procedures.....	41
6.1 Introduction .....	41
6.2 MCVideo client procedures.....	42
6.2.0 Distinction of requests at the MCVideo client.....	42
6.2.0.1 SIP MESSAGE request.....	42
6.2.1 SDP offer generation .....	42
6.2.2 SDP answer generation.....	43
6.2.3 Commencement modes.....	44
6.2.3.1 Automatic commencement mode.....	44
6.2.3.1.1 Automatic commencement mode for private calls .....	44
6.2.3.1.2 Automatic commencement mode for group calls .....	45
6.2.3.2 Manual commencement mode .....	45
6.2.3.2.1 Manual commencement mode for private calls .....	45
6.2.3.2.2 Manual commencement mode for group calls.....	45
6.2.4 Leaving an MCVideo session initiated by MCVideo client .....	46

6.2.4.1	On-demand session case .....	46
6.2.5	Releasing an MCVideo session initiated by MCVideo client.....	46
6.2.5.1	On-demand session case .....	46
6.2.5.2	Pre-established session case .....	46
6.2.6	Receiving an MCVideo session release request.....	47
6.2.7	Void .....	47
6.2.8	Priority call conditions.....	47
6.2.8.0	General .....	47
6.2.8.1	MCVideo emergency group call conditions.....	47
6.2.8.1.1	SIP INVITE request for originating MCVideo emergency group calls.....	47
6.2.8.1.2	Resource-Priority header field for MCVideo emergency group calls .....	48
6.2.8.1.3	SIP re-INVITE request for cancelling MCVideo in-progress emergency group state.....	48
6.2.8.1.4	Receiving a SIP 2xx response to a SIP request for a priority call .....	49
6.2.8.1.5	Receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to a SIP request for a priority group call .....	50
6.2.8.1.6	Determining authorisation for initiating or cancelling an MCVideo emergency alert.....	50
6.2.8.1.7	Determining authorisation for cancelling the in-progress emergency state of an MCVideo group.....	51
6.2.8.1.8	Determining authorisation for originating a priority group call .....	51
6.2.8.1.9	SIP request for originating MCVideo imminent peril group calls.....	52
6.2.8.1.10	Determining authorisation for cancelling an imminent peril group call .....	52
6.2.8.1.11	SIP re-INVITE request for cancelling MCVideo in-progress imminent peril group state .....	52
6.2.8.1.12	Resource-Priority header field for MCVideo imminent peril group calls .....	53
6.2.8.1.13	Receiving a SIP INFO request in the dialog of a SIP request for a priority group call .....	53
6.2.8.1.14	SIP re-INVITE request for cancelling the in-progress emergency group state of a group by a third-party.....	54
6.2.8.1.15	Retrieving Resource-Priority header field values.....	54
6.2.8.1.16	Resource-priority header field namespaces for MCVideo.....	55
6.2.8.1.17	Priority group call conditions upon receiving call release .....	55
6.2.8.1.18	Emergency private call conditions upon receiving call release .....	55
6.2.8.2	Request for an originating broadcast group call.....	56
6.2.8.3	MCVideo emergency private call conditions .....	56
6.2.8.3.1	Authorisations .....	56
6.2.8.3.2	SIP request for originating MCVideo emergency private calls .....	57
6.2.8.3.3	Resource-Priority header field for MCVideo emergency private calls.....	57
6.2.8.3.4	Receiving a SIP 2xx response to a SIP request for an MCVideo emergency private call .....	58
6.2.8.3.5	Receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to a SIP request for an MCVideo emergency private call.....	58
6.2.8.3.6	SIP re-INVITE request for cancelling MCVideo emergency private call state.....	58
6.2.8.3.7	Receiving a SIP INFO request in the dialog of a SIP request for a priority private call.....	59
6.2.8.3.8	SIP re-INVITE request for cancelling the MCVideo emergency private call state by a third- party.....	60
6.2.8.3.9	Retrieving a KMS URI associated with an MCVideo ID.....	60
6.2.9	Location information .....	61
6.2.9.1	Location information for location reporting.....	61
6.3	MCVideo server procedures.....	61
6.3.1	Distinction of requests sent to the MCVideo server .....	61
6.3.1.1	SIP INVITE request .....	61
6.3.1.2	SIP MESSAGE request.....	62
6.3.1.3	SIP SUBSCRIBE request.....	63
6.3.2	Participating MCVideo Function .....	64
6.3.2.1	Requests initiated by the served MCVideo user.....	64
6.3.2.1.1	SDP offer generation .....	64
6.3.2.1.2	SDP answer generation.....	64
6.3.2.1.3	Sending an INVITE request on receipt of an INVITE request.....	65
6.3.2.1.4	Response to an INVITE request .....	65
6.3.2.1.5	Sending a SIP BYE request on receipt of a SIP BYE request .....	66
6.3.2.1.6	Priority call conditions .....	66
6.3.2.1.7	Generating a SIP re-INVITE request on receipt of a SIP re-INVITE request .....	68
6.3.2.1.8	Sending a SIP INVITE request on receipt of SIP 3xx response .....	68
6.3.2.2	Requests terminated to the served MCVideo user .....	69
6.3.2.2.1	SDP offer generation .....	69

6.3.2.2.2	SDP answer generation.....	69
6.3.2.2.3	SIP INVITE request towards the terminating MCVideo client .....	69
6.3.2.2.4	Response to a SIP INVITE request .....	70
6.3.2.2.5	Automatic Commencement Mode.....	71
6.3.2.2.6	Manual Commencement Mode .....	73
6.3.2.2.7	Void.....	74
6.3.2.2.8	SIP BYE request towards the terminating MCVideo client .....	74
6.3.2.2.9	Populate MIME bodies.....	75
6.3.2.2.10	Generating a SIP re-INVITE request towards the terminating MCVideo client .....	75
6.3.2.2.11	Generating a SIP MESSAGE request towards the terminating MCVideo client .....	75
6.3.2.3	Processing I_MESSAGES containing MKFC and MKFC-ID .....	76
6.3.2.3.1	General .....	76
6.3.2.3.2	Processing an I_MESSAGE containing MKFC and MKFC-ID.....	76
6.3.3	Controlling MCVideo function.....	76
6.3.3.1	Request initiated by the controlling MCVideo function .....	76
6.3.3.1.1	SDP offer generation .....	76
6.3.3.1.2	Sending an INVITE request .....	77
6.3.3.1.3	Receipt of a SIP response to a SIP INVITE request.....	78
6.3.3.1.4	Sending a SIP BYE request.....	78
6.3.3.1.5	Sending a SIP re-INVITE request for MCVideo emergency group call .....	78
6.3.3.1.6	Sending a SIP INVITE request for MCVideo emergency group call.....	79
6.3.3.1.7	Sending a SIP UPDATE request for Resource-Priority header field correction.....	80
6.3.3.1.8	Generating a SIP re-INVITE request.....	81
6.3.3.1.9	Generating a SIP re-INVITE request to cancel an in-progress emergency .....	81
6.3.3.1.10	Generating a SIP MESSAGE request for notification of in-progress emergency or imminent peril status change .....	81
6.3.3.1.11	Populate mcvideo-info and location-info MIME bodies for emergency alert .....	82
6.3.3.1.12	Authorisations .....	83
6.3.3.1.13	Generating a SIP 403 response for priority call request rejection .....	86
6.3.3.1.14	Sending a SIP re-INVITE request for MCVideo imminent peril group call .....	86
6.3.3.1.15	Handling the expiry of timer TNG2 (in-progress emergency group call timer) .....	87
6.3.3.1.16	Validate priority request parameters.....	87
6.3.3.1.17	Sending a SIP INFO request in the dialog of a SIP request for a priority call.....	88
6.3.3.1.18	Retrieving Resource-Priority header field values.....	88
6.3.3.1.19	Generating a SIP MESSAGE request to indicate successful receipt of an emergency alert or emergency cancellation .....	89
6.3.3.2	Requests terminated by the controlling MCVideo function.....	89
6.3.3.2.1	SDP answer generation.....	89
6.3.3.2.2	Receipt of a SIP INVITE request .....	89
6.3.3.2.3	Sending a SIP response to a SIP INVITE request .....	90
6.3.3.2.4	Receiving a SIP BYE request.....	91
6.3.3.3	Handling of the acknowledged call setup timer (TNG1) .....	91
6.3.3.4	Generating a SIP NOTIFY request .....	93
6.3.3.5	Handling of the group call timer (TNG3) .....	94
6.3.3.5.1	General .....	94
6.3.3.5.2	Interaction with the in-progress emergency group call timer (TNG2) .....	95
6.3.3.6	Generation of I_MESSAGES containing MKFC and MKFC-ID.....	95
6.3.3.6.1	General .....	95
6.3.3.6.2	Creation of an I_MESSAGE containing MKFC .....	95
6.3.4	Non-controlling MCVideo function of an MCVideo group .....	96
6.3.4.1	Request initiated by the non-controlling MCVideo function of an MCVideo group.....	96
6.3.4.1.1	SDP offer generation .....	96
6.3.4.1.2	Sending an INVITE request towards the MCVideo client .....	96
6.3.4.1.3	Sending a SIP INFO request.....	97
6.3.4.1.4	Sending an INVITE request towards the controlling MCVideo function.....	98
6.3.4.2	Requests terminated by the non-controlling MCVideo function of an MCVideo group .....	99
6.3.4.2.1	SDP answer generation.....	99
6.3.4.2.2	Sending a SIP response to the SIP INVITE request .....	99
6.3.4.3	Generating a SIP NOTIFY request .....	100
6.3.5	Retrieving and processing a group document .....	101
6.3.5.1	General.....	101
6.3.5.2	Rules for retrieving Group Document(s).....	101

6.3.5.3	Rules for joining a group session .....	104
6.3.5.4	Rules for initiating a prearranged group session .....	105
6.3.5.5	Determining the group members to invite .....	105
6.3.6	Affiliation check .....	106
6.3.7	Error handling .....	106
6.3.7.1	Public service identity does not exist .....	106
6.3.8	Session release policy .....	106
6.3.8.1	Session release policy for group call .....	106
6.3.8.2	Session release policy for private call .....	107
6.4	Implicit transmit media request .....	107
6.5	Handling of MIME bodies in a SIP message .....	107
6.6	Confidentiality and Integrity Protection .....	108
6.6.1	General .....	108
6.6.1.1	Applicability and exclusions .....	108
6.6.1.2	Performing XML content encryption .....	108
6.6.1.3	Performing integrity protection on an XML body .....	108
6.6.1.4	Verifying integrity of an XML body and decrypting XML elements .....	108
6.6.2	Confidentiality Protection .....	109
6.6.2.1	General .....	109
6.6.2.2	Keys used in confidentiality protection procedures .....	109
6.6.2.3	Procedures for sending confidentiality protected content .....	109
6.6.2.3.1	MCVideo client .....	109
6.6.2.3.2	MCVideo server .....	110
6.6.2.3.3	Content Encryption in XML elements .....	110
6.6.2.3.4	Attribute URI Encryption .....	110
6.6.2.4	Procedures for receiving confidentiality protected content .....	111
6.6.2.4.1	Determination of confidentiality protected content .....	111
6.6.2.4.2	Decrypting confidentiality protected content in XML elements .....	111
6.6.2.4.3	Decrypting confidentiality protected URIs in XML attributes .....	111
6.6.2.5	MCVideo server copying received XML content .....	112
6.6.3	Integrity Protection of XML documents .....	112
6.6.3.1	General .....	112
6.6.3.2	Keys used in integrity protection procedures .....	114
6.6.3.3	Sending integrity protected content .....	114
6.6.3.3.1	MCVideo client .....	114
6.6.3.3.2	MCVideo server .....	114
6.6.3.3.3	Integrity protection procedure .....	115
6.6.3.4	Receiving integrity protected content .....	115
6.6.3.4.1	Determination of integrity protected content .....	115
6.6.3.4.2	Verification of integrity protected content .....	115
6.7	Priority sharing .....	116
6.8	Support for multiple devices .....	116
7	Registration and service authorisation .....	116
7.1	General .....	116
7.2	MCVideo client procedures .....	116
7.2.1	SIP REGISTER request for service authorisation .....	116
7.2.1AA	SIP REGISTER request without service authorisation .....	118
7.2.1A	Common SIP PUBLISH procedure .....	118
7.2.2	SIP PUBLISH request for service authorisation and MCVideo service settings .....	118
7.2.3	Sending SIP PUBLISH for MCVideo service settings only .....	119
7.2.4	Determination of MCVideo service settings .....	120
7.2.5	Receiving a CSK key download message .....	121
7.3	MCVideo server procedures .....	122
7.3.1	General .....	122
7.3.1A	Confidentiality and Integrity Protection .....	122
7.3.2	SIP REGISTER request for service authorisation .....	123
7.3.3	SIP PUBLISH request for service authorisation and service settings .....	124
7.3.4	Receiving SIP PUBLISH request for MCVideo service settings only .....	125
7.3.5	Receiving SIP PUBLISH request with "Expires=0" .....	126
7.3.6	Subscription to and notification of MCVideo service settings .....	127
7.3.6.1	Receiving subscription to MCVideo service settings .....	127

7.3.6.2	Sending notification of change of MCVideo service settings .....	127
7.3.7	Sending a CSK key download message .....	127
7.4	Coding .....	128
7.4.1	Extension of MIME types .....	128
7.4.1.1	General .....	128
7.4.1.2	Extension of application/poc-settings+xml MIME type .....	128
7.4.1.2.1	Introduction .....	128
7.4.1.2.2	Syntax .....	128
8	Affiliation .....	129
8.1	General .....	129
8.2	Procedures .....	130
8.2.1	MCVideo client procedures .....	130
8.2.1.1	General .....	130
8.2.1.2	Affiliation status change procedure.....	130
8.2.1.3	Affiliation status determination procedure.....	131
8.2.1.4	Procedure for sending affiliation status change request in negotiated mode to target MCVideo user .....	132
8.2.1.5	Procedure for receiving affiliation status change request in negotiated mode from authorized MCVideo user .....	133
8.2.1.6	Subscription to group dynamic data.....	133
8.2.2	MCVideo server procedures .....	134
8.2.2.1	General .....	134
8.2.2.2	Procedures of MCVideo server serving the MCVideo user .....	134
8.2.2.2.1	General .....	134
8.2.2.2.2	Stored information.....	134
8.2.2.2.3	Receiving affiliation status change from MCVideo client procedure.....	135
8.2.2.2.4	Receiving subscription to affiliation status procedure.....	138
8.2.2.2.5	Sending notification of change of affiliation status procedure .....	139
8.2.2.2.6	Sending affiliation status change towards MCVideo server owning MCVideo group procedure.....	139
8.2.2.2.7	Affiliation status determination from MCVideo server owning MCVideo group procedure.....	141
8.2.2.2.8	Procedure for authorizing affiliation status change request in negotiated mode sent to served MCVideo user .....	143
8.2.2.2.9	Forwarding affiliation status change towards another MCVideo user procedure.....	144
8.2.2.2.10	Forwarding subscription to affiliation status towards another MCVideo user procedure .....	144
8.2.2.2.11	Affiliation status determination .....	145
8.2.2.2.12	Affiliation status change by implicit affiliation .....	146
8.2.2.2.13	Implicit affiliation status change completion.....	147
8.2.2.2.14	Implicit affiliation status change cancellation .....	147
8.2.2.2.15	Implicit affiliation to configured groups procedure.....	148
8.2.2.2.16	Forwarding subscription to group dynamic data towards the controlling MCVideo server procedure .....	149
8.2.2.3	Procedures of MCVideo server owning the MCVideo group .....	150
8.2.2.3.1	General .....	150
8.2.2.3.2	Stored information.....	150
8.2.2.3.3	Receiving group affiliation status change procedure.....	151
8.2.2.3.4	Receiving subscription to affiliation status procedure.....	152
8.2.2.3.5	Sending notification of change of affiliation status procedure .....	153
8.2.2.3.6	Implicit affiliation eligibility check procedure .....	154
8.2.2.3.7	Affiliation status change by implicit affiliation procedure .....	154
8.2.2.3.8	Affiliation eligibility check procedure.....	154
8.2.2.3.9	Receiving subscription to group dynamic data procedure.....	155
8.2.2.3.10	Sending notification of change of group dynamic data procedure .....	156
8.3	Coding .....	156
8.3.1	Extension of application/pidf+xml MIME type.....	156
8.3.1.1	Introduction .....	156
8.3.1.2	Syntax .....	156
8.3.2	Extension of application/simple-filter+xml MIME type.....	159
8.3.2.1	Introduction .....	159
8.3.2.2	Syntax .....	159

9	Group call.....	161
9.1	General.....	161
9.2	On-network group call.....	161
9.2.1	Prearranged group call.....	161
9.2.1.1	General.....	161
9.2.1.2	MCVideo client procedures.....	161
9.2.1.2.1	On-demand prearranged group call.....	161
9.2.1.2.3	End group call.....	169
9.2.1.2.4	Re-join procedure.....	169
9.2.1.3	Participating MCVideo function procedures.....	169
9.2.1.3.1	Originating procedures.....	169
9.2.1.3.2	Terminating Procedures.....	173
9.2.1.3.3	End group call at the originating participating MCVideo function.....	174
9.2.1.3.4	End group call at the terminating participating MCVideo function.....	174
9.2.1.3.5	Re-join procedures.....	174
9.2.1.3.6	Reception of a SIP re-INVITE request for terminating MCVideo client for priority call.....	174
9.2.1.4	Controlling MCVideo function procedures.....	175
9.2.1.4.1	Originating Procedures.....	175
9.2.1.4.2	Terminating Procedures.....	178
9.2.1.4.3	End group call at the terminating controlling MCVideo function.....	186
9.2.1.4.4	End group call initiated by the controlling MCVideo function.....	186
9.2.1.4.5	Re-join procedures.....	186
9.2.1.4.6	Late call entry initiated by controlling MCVideo function.....	187
9.2.1.4.7	Receipt of a SIP re-INVITE request.....	187
9.2.1.4.8	Handling of a SIP re-INVITE request for imminent peril session.....	191
9.2.1.5	Non-controlling function of an MCVideo group procedures.....	192
9.2.1.5.1	Originating procedures.....	192
9.2.1.5.2	Terminating procedures.....	193
9.2.1.5.3	Rejoin procedures.....	197
9.2.1.5.4	SIP OPTIONS request authorization procedure.....	197
9.2.1.5.5	Initiating a temporary group session.....	198
9.2.2	Chat group (restricted) call.....	199
9.2.2.1	General.....	199
9.2.2.2	MCVideo client procedures.....	199
9.2.2.2.1	On-demand chat group call.....	199
9.2.2.2.2	End group call.....	207
9.2.2.3	Participating MCVideo function procedures.....	207
9.2.2.3.1	On-demand chat group call.....	207
9.2.2.4	Controlling MCVideo function procedures.....	211
9.2.2.4.1	On-demand chat group call.....	211
9.2.2.4.2	End group call at the terminating controlling MCVideo function.....	222
9.2.2.4.3	End group call initiated by the controlling MCVideo function.....	222
9.2.2.5	Non-controlling function of an MCVideo group procedures.....	222
9.2.2.5.1	Terminating procedures.....	222
9.2.3	Subscription to the conference event package.....	226
9.2.3.1	General.....	226
9.2.3.2	MCVideo client.....	226
9.2.3.3	Participating MCVideo function.....	227
9.2.3.4	Controlling MCVideo function.....	228
9.2.3.4.1	Receiving a subscription to the conference event package.....	228
9.2.3.4.2	Sending notifications to the conference event package.....	229
9.2.3.4.3	Sending subscriptions to the conference event package.....	229
9.2.3.4.4	Terminating a subscription.....	230
9.2.4	Remote change of an MCVideo user's selected group.....	230
9.2.4.1	General.....	230
9.2.4.2	Client procedures.....	231
9.2.4.2.1	Remote selected group change initiation.....	231
9.2.4.2.2	Target client procedures for handling remote selected group change request.....	232
9.2.4.3	Participating MCVideo function procedures.....	233
9.2.4.3.1	Originating procedures.....	233
9.2.4.3.2	Terminating procedures.....	234
9.2.4.4	Controlling MCVideo function procedures.....	234

9.3	Off-network group call .....	236
9.3.1	General .....	236
9.3.1.1	Common Procedures .....	236
9.3.1.1.1	MONP MCVideo message transport .....	236
9.3.1.1.2	Session description .....	236
9.3.2	Basic call control .....	237
9.3.2.1	General .....	237
9.3.2.2	Basic call control state machine .....	237
9.3.2.3	Call Control states .....	238
9.3.2.3.1	S1: start-stop .....	238
9.3.2.3.2	S2: waiting for call announcement .....	239
9.3.2.3.3	S3: part of ongoing call .....	239
9.3.2.3.4	S4: pending user action without confirm indication .....	239
9.3.2.3.5	S5: pending user action with confirm indication .....	239
9.3.2.3.6	S6: ignoring incoming call announcements .....	239
9.3.2.3.7	S7: waiting for call announcement after call release .....	239
9.3.2.4	Procedures .....	239
9.3.2.4.1	General .....	239
9.3.2.4.2	Call Probe .....	240
9.3.2.4.3	Call setup .....	241
9.3.2.4.4	Periodic group call announcement .....	244
9.3.2.4.5	Call release .....	245
9.3.2.4.6	Merge of calls .....	248
9.3.2.4.7	Error handling .....	249
9.3.3	Call type control .....	249
9.3.3.1	General .....	249
9.3.3.2	Call type control state machine .....	249
9.3.3.3	Call type control states .....	250
9.3.3.3.1	T0: waiting for call to establish .....	250
9.3.3.3.2	T1: in-progress emergency group call .....	251
9.3.3.3.3	T2: in-progress basic group call .....	251
9.3.3.3.4	T3: in-progress imminent peril group call .....	251
9.3.3.4	Procedures .....	251
9.3.3.4.1	General .....	251
9.3.3.4.2	User initiated the call probe .....	251
9.3.3.4.3	Received GROUP CALL ANNOUNCEMENT message as a response to GROUP CALL PROBE message .....	252
9.3.3.4.4	Received GROUP CALL ANNOUNCEMENT with MCVideo user acknowledgement required .....	253
9.3.3.4.5	Received GROUP CALL ANNOUNCEMENT without MCVideo user acknowledgement required .....	253
9.3.3.4.6	Call started .....	254
9.3.3.4.7	Upgrade call .....	255
9.3.3.4.8	Downgrade call .....	257
9.3.3.4.9	Merge of two calls .....	261
9.3.3.4.10	Call release after call establishment .....	261
9.3.3.4.11	Call release or reject before call establishment .....	262
9.3.3.4.12	Error handling .....	262
9.4	Off-network Broadcast group call .....	262
9.4.1	General .....	262
9.4.2	Basic call control .....	262
9.4.2.1	General .....	262
9.4.2.2	Broadcast group call control state machine .....	262
9.4.2.3	Broadcast group call Control states .....	263
9.4.2.3.1	B1: start-stop .....	263
9.4.2.3.2	B2: in-progress broadcast group call .....	263
9.4.2.3.3	B3: pending user action .....	263
9.4.2.3.4	B4: ignoring same call ID .....	263
9.4.2.4	Procedures .....	264
9.4.2.4.1	User initiating a broadcast group call .....	264
9.4.2.4.2	Terminating UE receiving a GROUP CALL BROADCAST message when not participating in the in-progress broadcast group call .....	264

9.4.2.4.3	MCVideo user accepts the terminating call.....	265
9.4.2.4.4	MCVideo user rejects the terminating call.....	265
9.4.2.4.5	MCVideo user does not act on terminating call.....	265
9.4.2.4.6	Terminating user releasing the call.....	265
9.4.2.4.7	Originating user releasing the call.....	265
9.4.2.4.8	Receiving GROUP CALL BROADCAST END message.....	266
9.4.2.4.9	Originating UE retransmitting GROUP CALL BROADCAST message.....	266
9.4.2.4.10	Ignoring same call ID.....	266
9.4.2.4.11	Releasing the call.....	266
10	Private call.....	267
10.1	General.....	267
10.2	Private call in on-network.....	267
10.2.1	General.....	267
10.2.2	Private call with transmission control.....	267
10.2.2.1	General.....	267
10.2.2.2	MCVideo client procedures.....	268
10.2.2.2.1	Client originating procedures.....	268
10.2.2.2.2	Client terminating procedures.....	269
10.2.2.2.3	Client terminating procedures for reception of SIP re-INVITE request.....	271
10.2.2.2.4	MCVideo in-progress emergency cancel.....	272
10.2.2.2.5	Upgrade to MCVideo emergency private call.....	273
10.2.2.3	Participating MCVideo function procedures.....	274
10.2.2.3.1	Originating procedures.....	274
10.2.2.3.2	Terminating procedures.....	281
10.2.2.3.3	Receipt of SIP re-INVITE request by terminating participating function.....	282
10.2.2.4	Controlling MCVideo function procedures.....	283
10.2.2.4.1	Originating procedures.....	283
10.2.2.4.2	Terminating procedures.....	284
10.2.2.4.3	Receiving a SIP re-INVITE for upgrade to emergency private call.....	286
10.2.2.4.4	Receiving a SIP re-INVITE for cancellation of emergency private call.....	288
10.2.2.4.5	Sending a SIP re-INVITE for upgrade to emergency private call.....	289
10.2.2.4.6	Sending a SIP re-INVITE for cancellation of emergency private call.....	290
10.2.3	Private call without transmission control.....	290
10.2.3.1	MCVideo client procedures.....	290
10.2.3.2	Participating MCVideo function procedures.....	291
10.2.3.2.1	Originating procedures.....	291
10.2.3.2.2	Terminating procedures.....	291
10.2.3.3	Controlling MCVideo function procedures.....	291
10.2.3.3.1	Originating procedures.....	291
10.2.3.3.2	Terminating procedures.....	291
10.2.4	Ending the private call initiated by MCVideo client.....	291
10.2.4.1	MCVideo client procedures.....	291
10.2.4.1.1	On-demand private call.....	291
10.2.4.2	Participating MCVideo function procedures.....	292
10.2.4.2.1	Originating procedures.....	292
10.2.4.2.2	Terminating procedures.....	292
10.2.4.3	Controlling MCVideo function procedures.....	292
10.2.4.3.1	Terminating procedures.....	292
10.2.5	Ending the private call initiated by the MCVideo server.....	292
10.2.5.1	General.....	292
10.2.5.2	MCVideo client procedures.....	292
10.2.5.3	Participating MCVideo function procedures.....	292
10.2.5.3.1	Originating procedures.....	292
10.2.5.3.2	Terminating procedures.....	292
10.2.5.4	Controlling MCVideo function procedures.....	292
10.3	Off-network private call.....	293
10.3.1	General.....	293
10.3.1.1	Common procedures.....	293
10.3.1.1.1	Sending/Receiving a message.....	293
10.3.1.1.2	Session description.....	293
10.3.2	Basic call control.....	294

10.3.2.1	General .....	294
10.3.2.2	Private call control state machine.....	294
10.3.2.3	Private call control states .....	295
10.3.2.3.1	P0: start-stop.....	295
10.3.2.3.2	P1: ignoring same call id .....	295
10.3.2.3.3	P2: waiting for call response .....	295
10.3.2.3.4	P3: waiting for release response .....	295
10.3.2.3.5	P4: part of ongoing call .....	295
10.3.2.3.6	P5: pending.....	295
10.3.2.4	Procedures.....	296
10.3.2.4.1	General .....	296
10.3.2.4.2	Private call setup.....	296
10.3.2.4.3	Private call setup in automatic commencement mode.....	299
10.3.2.4.4	Private call setup in manual commencement mode.....	302
10.3.2.4.5	Private call release.....	306
10.3.2.4.6	Error handling.....	308
11	Emergency Alert .....	308
11.1	General .....	308
11.2	On-network emergency alert .....	308
11.2.1	Client procedures .....	308
11.2.1.1	Emergency alert origination .....	308
11.2.1.2	Emergency alert cancellation .....	309
11.2.1.3	MCVideo client receives an MCVideo emergency alert or call notification .....	311
11.2.2	Participating MCVideo function procedures .....	313
11.2.2.1	Receipt of a SIP MESSAGE request for emergency notification from the served MCVideo client...313	
11.2.2.2	Receipt of a SIP MESSAGE request for emergency notification for terminating MCVideo client...314	
11.2.2.3	Receipt of a SIP MESSAGE request indicating successful delivery of emergency notification .....	314
11.2.3	Controlling MCVideo function procedures .....	315
11.2.3.1	Handling of a SIP MESSAGE request for emergency notification.....	315
11.2.3.2	Handling of a SIP MESSAGE request for emergency alert cancellation.....	317
11.3	Off-network emergency alert .....	320
11.3.1	General.....	320
11.3.2	Basic state machine.....	320
11.3.2.1	General .....	320
11.3.2.2	Emergency alert state machine.....	320
11.3.2.3	Emergency alert states.....	320
11.3.2.3.1	E1: Not in emergency state.....	320
11.3.2.3.2	E2: Emergency state .....	320
11.3.3	Procedures.....	321
11.3.3.1	Originating user sending emergency alert.....	321
11.3.3.2	Emergency alert retransmission .....	321
11.3.3.3	Terminating user receiving emergency alert .....	321
11.3.3.4	Terminating user receiving retransmitted emergency alert .....	322
11.3.3.5	Originating user cancels emergency alert .....	322
11.3.3.6	Terminating user receives GROUP EMERGENCY ALERT CANCEL message .....	322
11.3.3.7	Implicit emergency alert cancel .....	323
12	Video Pull.....	323
12.1	General .....	323
12.2	On-network video pull.....	323
12.2.1	General.....	323
12.2.2	MCVideo client procedures .....	323
12.2.2.1	One-to-one video pull originating procedures.....	323
12.2.2.2	One-to-one video pull terminating procedures.....	323
12.2.2.3	One-to-one video pull release procedures .....	323
12.2.2.4	One-from-server video pull originating procedures .....	324
12.2.2.5	One-from-server video pull terminating procedures .....	324
12.2.2.6	One-from-server video pull release procedures .....	324
12.2.3	MCVideo server procedures .....	324
12.2.3.1	Participating MCVideo function procedures.....	324
12.2.3.1.1	One-to-one video pull originating procedures .....	324

12.2.3.1.2	One-to-one video pull terminating procedures .....	324
12.2.3.1.3	One-to-one video pull release procedures .....	324
12.2.3.1.4	One-from-server video pull originating procedures .....	324
12.2.3.1.5	One-from-server video pull terminating procedures.....	325
12.2.3.1.6	One-from-server video pull release procedures.....	325
12.2.3.2	Controlling MCVideo function procedures.....	325
12.2.3.2.1	One-to-one video pull originating procedures .....	325
12.2.3.2.2	One-to-one video pull terminating procedures .....	325
12.2.3.2.3	One-to-one video pull release procedures .....	325
12.2.3.2.4	One-from-server video pull originating procedures .....	325
12.2.3.2.5	One-from-server video pull terminating procedures.....	325
12.2.3.2.6	One-from-server video pull release procedures.....	326
12.3	Off-network video pull.....	326
12.3.1	General.....	326
12.3.2	MCVideo client procedures .....	326
12.3.2.1	Off network video pull setup.....	326
12.3.2.1.1	Initiating video pull .....	326
12.3.2.1.2	Video pull setup request accepted .....	326
12.3.2.2	Off network video pull setup in automatic commencement mode.....	326
12.3.2.2.1	Responding to video pull setup request when not participating in the ongoing call.....	326
12.3.2.2.2	Establishing the video pull call.....	326
13	Video Push .....	327
13.1	General .....	327
13.2	On-network video push .....	327
13.2.1	General.....	327
13.2.2	MCVideo client procedures .....	327
13.2.2.1	One-to-one video push originating procedures .....	327
13.2.2.2	One-to-one video push terminating procedures .....	327
13.2.2.3	One-to-one video push release procedures.....	327
13.2.2.4	One-to-server video push originating procedures .....	327
13.2.2.5	One-to-server video push release procedures.....	328
13.2.3	MCVideo server procedures .....	328
13.2.3.1	Participating MCVideo function procedures.....	328
13.2.3.1.1	One-to-one video push originating procedures.....	328
13.2.3.1.2	One-to-one video push terminating procedures.....	328
13.2.3.1.3	One-to-one video push release procedures .....	328
13.2.3.1.4	One-to-server video push originating procedures.....	328
13.2.3.1.5	One-to-server video push release procedures .....	328
13.2.3.2	Controlling MCVideo function procedures.....	329
13.2.3.2.1	One-to-one video push terminating procedures.....	329
13.2.3.2.2	One-to-one video push release procedures .....	329
13.2.3.2.3	One-to-server video push terminating procedures.....	329
13.2.3.2.4	One-to-server video push release procedures .....	330
13.3	Off-network video push.....	330
13.3.1	General.....	330
13.3.1.1	Common Procedures .....	330
13.3.1.1.1	Sending/Receiving a message .....	330
13.3.2	MCVideo client procedures .....	330
13.3.2.1	Video push to another MCVideo user.....	330
13.3.2.1.1	Private video push call setup .....	330
13.3.2.1.2	Private video push call setup in manual commencement mode.....	330
13.3.2.1.3	Private video push call release.....	330
13.3.2.1.4	Sending video push notification .....	330
13.3.2.1.5	Receiving video push notification .....	331
13.3.2.2	Remotely initiated video push.....	331
13.3.2.2.1	Initiating a remote video push request.....	331
13.3.2.2.2	Sending video push trying response .....	332
13.3.2.2.3	Private video push call setup .....	332
13.3.2.2.4	Private video push call setup in manual commencement mode.....	332
13.3.2.2.5	Private video push call release.....	332
13.3.2.2.6	Sending video push notification .....	332

13.3.2.2.7	Receiving video push notification .....	333
13.3.2.3	Remotely initiated video push to a group.....	333
13.3.2.3.1	Initiating a remote video push request to a group.....	333
13.3.2.3.2	Group video push call setup .....	334
13.3.3	Void .....	335
14	Capability information sharing.....	335
14.1	General .....	335
14.2	On-network capability information sharing .....	335
14.2.1	General.....	335
14.2.2	MCVideo client procedures .....	335
14.2.3	MCVideo server procedures .....	335
14.3	Off-network capability information sharing.....	335
14.3.1	General.....	335
14.3.2	MCVideo client procedures .....	335
14.3.3	MCVideo server procedures .....	335
15	Ambient viewing call .....	335
15.1	General .....	335
15.2	MCVideo client procedures.....	336
15.2.1	On-demand ambient viewing call .....	336
15.2.1.1	Client originating procedures for remote-initiated call .....	336
15.2.1.2	Client terminating procedures .....	338
15.2.1.3	Client release origination procedure.....	339
15.2.1.4	Client session release termination procedure .....	340
15.2.2	Ambient viewing call using pre-established session.....	340
15.2.2.1	Client originating procedures .....	340
15.2.2.2	Client terminating procedures .....	342
15.2.2.3	Client release origination procedure.....	342
15.2.2.4	Reception of SIP INFO request with release-reason.....	343
15.2.2.5	Client session release termination procedure .....	343
15.3	Participating MCVideo function procedures .....	343
15.3.1	Originating procedures .....	343
15.3.1.1	On-demand ambient viewing call .....	343
15.3.1.2	Receipt of SIP BYE request for on-demand ambient viewing call .....	345
15.3.1.3	Receipt of REFER "BYE" request for private call using pre-established session.....	345
15.3.1.4	Ambient viewing call initiation using pre-established session.....	345
15.3.2	Terminating procedures .....	347
15.3.2.1	Terminating procedures for ambient viewing call.....	347
15.3.2.2	Receipt of SIP BYE request for on-demand ambient viewing call .....	348
15.3.2.3	Receipt of SIP BYE request for an ongoing pre-established session .....	348
15.4	Controlling MCVideo function procedures.....	348
15.4.1	Originating procedures .....	348
15.4.2	Terminating procedures .....	349
15.4.3	Server initiated ambient call release .....	350
15.4.4	Reception of a SIP BYE request .....	351
16	Use of MBMS transmission (on-network) .....	352
16.1	General .....	352
16.2	MCVideo client procedures.....	352
16.2.1	General.....	352
16.2.2	Receiving an MBMS bearer announcement .....	352
16.2.3	The MBMS bearer listening status and suspension report procedures .....	353
16.2.3.1	Conditions for sending an MBMS listening status report .....	353
16.2.3.2	Sending the MBMS bearer listening or suspension status report.....	355
16.2.4	Receiving a MuSiK download message.....	356
16.3	Participating MCVideo server procedures.....	358
16.3.1	General.....	358
16.3.2	Sending MBMS bearer announcement procedures.....	358
16.3.2.1	General .....	358
16.3.2.2	Sending an initial MBMS bearer announcement procedure.....	358
16.3.2.3	Updating an announcement .....	361
16.3.2.4	Cancelling an MBMS bearer announcement.....	361

16.3.2.5	Sending a MuSiK download message .....	361
16.3.3	Receiving an MBMS bearer listening status from an MCVideo client.....	362
16.3.4	Abnormal cases.....	364
17	Off-network message formats .....	364
17.1	MONP MCVIDEO message functional definitions and contents .....	364
17.1.1	General.....	364
17.1.2	GROUP CALL PROBE message .....	364
17.1.2.1	Message definition .....	364
17.1.3	GROUP CALL ANNOUNCEMENT message .....	364
17.1.3.1	Message definition .....	364
17.1.4	GROUP CALL ACCEPT message.....	365
17.1.4.1	Message definition .....	365
17.1.5	PRIVATE CALL SETUP REQUEST message.....	365
17.1.5.1	Message definition .....	365
17.1.6	PRIVATE CALL RINGING message.....	366
17.1.6.1	Message definition .....	366
17.1.7	PRIVATE CALL ACCEPT message .....	366
17.1.7.1	Message definition .....	366
17.1.8	PRIVATE CALL REJECT message .....	367
17.1.8.1	Message definition .....	367
17.1.9	PRIVATE CALL RELEASE message .....	367
17.1.9.1	Message definition .....	367
17.1.10	PRIVATE CALL RELEASE ACK message.....	368
17.1.10.1	Message definition .....	368
17.1.11	PRIVATE CALL ACCEPT ACK message.....	368
17.1.11.1	Message definition .....	368
17.1.12	GROUP CALL IMMINENT PERIL END message .....	369
17.1.12.1	Message definition .....	369
17.1.13	GROUP CALL EMERGENCY END message .....	369
17.1.13.1	Message definition .....	369
17.1.14	GROUP EMERGENCY ALERT message.....	370
17.1.14.1	Message definition .....	370
17.1.15	GROUP EMERGENCY ALERT ACK message .....	370
17.1.15.1	Message definition .....	370
17.1.16	GROUP EMERGENCY ALERT CANCEL message.....	370
17.1.16.1	Message definition .....	370
17.1.17	GROUP EMERGENCY ALERT CANCEL ACK message.....	371
17.1.17.1	Message definition .....	371
17.1.18	GROUP CALL BROADCAST message.....	371
17.1.18.1	Message definition .....	371
17.1.19	GROUP CALL BROADCAST END message.....	372
17.1.19.1	Message definition .....	372
17.1.20	PRIVATE REMOTE VIDEO PUSH REQUEST message .....	372
17.1.20.1	Message definition .....	372
17.1.21	GROUP REMOTE VIDEO PUSH REQUEST message.....	373
17.1.21.1	Message definition .....	373
17.1.22	VIDEO PUSH TRYING RESPONSE message .....	373
17.1.22.1	Message definition .....	373
17.1.23	NOTIFY VIDEO PUSH message.....	374
17.1.23.1	Message definition .....	374
17.2	General message format and information elements coding.....	374
17.2.1	General.....	374
17.2.2	Message type .....	375
17.2.3	Call identifier .....	376
17.2.4	Refresh interval.....	376
17.2.5	MCVideo group ID.....	377
17.2.6	SDP.....	377
17.2.7	Commencement mode .....	378
17.2.8	Reason .....	378
17.2.9	Confirm mode indication .....	378
17.2.10	MCVideo user ID .....	379