



LTE;  
**Mission Critical Push To Talk (MCPTT) call control;  
Protocol specification  
(3GPP TS 24.379 version 15.7.0 Release 15)**

iTeh 3GPP MCPTT PREVIEW  
Full standard  
<https://standards.iteh.ai/catalog/standards/15.7.0/8d76085-2dae-4ff8-8df4-c2468fc2b4ad/etsi-ts-124-379-v15.7.0-2020-01>



---

Reference

RTS/TSGC-0124379vf70

---

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 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**Important notice**

The present document can be downloaded from:  
<http://www.etsi.org/standards-search>

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 at [www.etsi.org/deliver](http://www.etsi.org/deliver).

Users of the present document should be aware that the document may be subject to revision or change of status.  
Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:  
<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

---

**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 2020.  
All rights reserved.

**DECT™, PLUGTESTS™, UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.  
**3GPP™** and **LTE™** 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.

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is 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 Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, 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.

---

# 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 under <http://webapp.etsi.org/key/queryform.asp>.

---

# 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.....	23
1    Scope .....	24
2    References .....	24
3    Definitions, symbols and abbreviations .....	27
3.1    Definitions .....	27
3.2    Abbreviations .....	30
4    General .....	31
4.1    MCPTT overview.....	31
4.2    URI and address assignments .....	32
4.3    MCPTT speech.....	32
4.4    Warning Header Field .....	32
4.4.1    General.....	32
4.4.2    Warning texts.....	32
4.5    MCPTT session identity .....	37
4.6    MCPTT priority calls and alerts .....	38
4.6.1    MCPTT emergency group calls .....	38
4.6.2    MCPTT emergency private calls .....	39
4.6.3    MCPTT emergency alerts .....	40
4.6.4    MCPTT imminent peril group call.....	41
4.7    Communication security.....	42
4.7.1    Media security .....	42
4.7.2    Signalling security .....	43
4.8    Protection of sensitive application data.....	44
4.9    Pre-established session .....	47
4.10    MCPTT client ID .....	48
4.11    Off-network MCPTT.....	48
4.12    Broadcast Group Calls.....	48
5    Functional entities .....	49
5.1    Introduction .....	49
5.2    MCPTT client.....	49
5.3    MCPTT server.....	50
5.3.1    General.....	50
5.3.2    Functional connectivity models .....	51
5.3.3    Failure case .....	53
5.3.4    Management of MBMS bearers.....	53
5.4    MCPTT UE-to-network relay.....	53
6    Common procedures.....	54
6.1    Introduction .....	54
6.2    MCPTT client procedures .....	54
6.2.0    Distinction of requests at the MCPTT client .....	54
6.2.0.1    SIP MESSAGE request.....	54
6.2.1    SDP offer generation .....	55
6.2.2    SDP answer generation .....	56
6.2.3    Commencement modes .....	57
6.2.3.1    Automatic commencement mode.....	57
6.2.3.1.1    Automatic commencement mode for private calls .....	57
6.2.3.1.2    Automatic commencement mode for group calls .....	57
6.2.3.2    Manual commencement mode .....	57
6.2.3.2.1    Manual commencement mode for private calls .....	57

6.2.3.2.2	Manual commencement mode for group calls.....	58
6.2.4	Leaving an MCPTT session initiated by MCPTT client.....	58
6.2.4.1	On-demand session case .....	58
6.2.4.2	Pre-established session case .....	59
6.2.5	Releasing an MCPTT session initiated by MCPTT client.....	59
6.2.5.1	On-demand session case .....	59
6.2.5.2	Pre-established session case .....	59
6.2.6	Receiving an MCPTT session release request .....	60
6.2.7	Void .....	60
6.2.8	Priority call conditions.....	60
6.2.8.0	General .....	60
6.2.8.1	MCPTT emergency group call conditions .....	60
6.2.8.1.1	SIP INVITE request or SIP REFER request for originating MCPTT emergency group calls .....	60
6.2.8.1.2	Resource-Priority header field for MCPTT emergency group calls .....	61
6.2.8.1.3	SIP re-INVITE request for cancelling MCPTT in-progress emergency group state .....	62
6.2.8.1.4	Receiving a SIP 2xx response to a SIP request for a priority call .....	62
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 .....	63
6.2.8.1.6	Determining authorisation for initiating or cancelling an MCPTT emergency alert .....	63
6.2.8.1.7	Determining authorisation for cancelling the in-progress emergency state of an MCPTT group.....	64
6.2.8.1.8	Determining authorisation for originating a priority group call .....	64
6.2.8.1.9	SIP request for originating MCPTT imminent peril group calls .....	65
6.2.8.1.10	Determining authorisation for cancelling an imminent peril group call .....	65
6.2.8.1.11	SIP re-INVITE request for cancelling MCPTT in-progress imminent peril group state .....	66
6.2.8.1.12	Resource-Priority header field for MCPTT imminent peril group calls .....	66
6.2.8.1.13	Receiving a SIP INFO request in the dialog of a SIP request for a priority group call .....	66
6.2.8.1.14	SIP re-INVITE request for cancelling the in-progress emergency group state of a group by a third-party .....	67
6.2.8.1.15	Retrieving Resource-Priority header field values .....	68
6.2.8.1.16	Handling receipt of a SIP re-INVITE request for priority group call origination status within a pre-established session.....	68
6.2.8.1.17	Priority group call conditions upon receiving call release.....	69
6.2.8.1.18	Emergency private call conditions upon receiving call release .....	69
6.2.8.2	Request for an originating broadcast group call.....	70
6.2.8.3	MCPTT emergency private call conditions.....	70
6.2.8.3.1	Authorisations .....	70
6.2.8.3.1.1	Determining authorisation for initiating an MCPTT emergency private call .....	70
6.2.8.3.1.2	Determining authorisation for cancelling an MCPTT emergency private call .....	70
6.2.8.3.1.3	Determining authorisation for initiating or cancelling an MCPTT emergency alert to a MCPTT user .....	71
6.2.8.3.2	SIP request for originating MCPTT emergency private calls.....	71
6.2.8.3.3	Resource-Priority header field for MCPTT emergency private calls .....	71
6.2.8.3.4	Receiving a SIP 2xx response to a SIP request for an MCPTT emergency private call.....	72
6.2.8.3.5	Receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to a SIP request for an MCPTT emergency private call.....	72
6.2.8.3.6	SIP re-INVITE request for cancelling MCPTT emergency private call state.....	72
6.2.8.3.7	Receiving a SIP INFO request in the dialog of a SIP request for a priority private call.....	73
6.2.8.3.8	SIP re-INVITE request for cancelling the MCPTT emergency private call state by a third-party .....	74
6.2.8.3.9	Retrieving a KMS URI associated with an MCPTT ID .....	74
6.2.9	Location information .....	75
6.2.9.1	Location information for location reporting .....	75
6.3	MCPTT server procedures .....	76
6.3.1	Distinction of requests sent to the MCPTT server .....	76
6.3.1.1	SIP INVITE request .....	76
6.3.1.2	SIP REFER request .....	77
6.3.1.3	SIP MESSAGE request .....	77
6.3.1.4	SIP SUBSCRIBE request .....	80
6.3.2	Participating MCPTT Function.....	80
6.3.2.1	Requests initiated by the served MCPTT user .....	80
6.3.2.1.1	SDP offer generation .....	80

6.3.2.1.1.1	On-demand session .....	80
6.3.2.1.1.2	Pre-established session.....	80
6.3.2.1.2	SDP answer generation.....	81
6.3.2.1.2.1	On-demand session .....	81
6.3.2.1.2.2	Pre-established session establishment.....	81
6.3.2.1.3	Sending an INVITE request on receipt of an INVITE request .....	81
6.3.2.1.4	Sending an INVITE request on receipt of a REFER request.....	82
6.3.2.1.5	Response to an INVITE request .....	84
6.3.2.1.5.1	Provisional responses.....	84
6.3.2.1.5.2	Final response .....	84
6.3.2.1.6	Sending a SIP BYE request on receipt of a SIP BYE request .....	85
6.3.2.1.7	Sending a SIP BYE request on receipt of a SIP REFER request.....	85
6.3.2.1.8	Priority call conditions .....	86
6.3.2.1.8.0	General.....	86
6.3.2.1.8.1	Determining authorisation for originating a priority group call.....	86
6.3.2.1.8.2	Determining authorisation for initiating or cancelling an MCPTT emergency alert.....	87
6.3.2.1.8.3	Validate priority request parameters .....	87
6.3.2.1.8.4	Retrieving Resource-Priority header field values .....	87
6.3.2.1.8.5	Generating a SIP re-INVITE request for priority group call origination within a pre-established session .....	87
6.3.2.1.8.6	Generating a SIP re-INVITE request for emergency private call origination within a pre-established session .....	88
6.3.2.1.8.7	Generating a SIP re-INVITE request for first-to-answer call origination within a pre-established session .....	89
6.3.2.1.9	Generating a SIP re-INVITE request on receipt of a SIP re-INVITE request .....	90
6.3.2.1.10	Sending a SIP INVITE request on receipt of SIP 3xx response .....	90
6.3.2.2	Requests terminated to the served MCPTT user.....	91
6.3.2.2.1	SDP offer generation .....	91
6.3.2.2.2	SDP answer generation.....	91
6.3.2.2.2.1	On-demand session .....	91
6.3.2.2.2.2	Pre-established session.....	91
6.3.2.2.3	SIP INVITE request towards the terminating MCPTT client.....	91
6.3.2.2.4	Response to a SIP INVITE request .....	92
6.3.2.2.4.1	Provisional response .....	92
6.3.2.2.4.2	Final response .....	92
6.3.2.2.5	Automatic Commencement Mode.....	93
6.3.2.2.5.1	General.....	93
6.3.2.2.5.2	Automatic commencement for On-Demand session.....	93
6.3.2.2.5.3	Automatic commencement for pre-established session .....	95
6.3.2.2.6	Manual Commencement Mode .....	96
6.3.2.2.6.1	General.....	96
6.3.2.2.6.2	Manual commencement for On-Demand session .....	96
6.3.2.2.6.3	Manual commencement for Pre-established session.....	97
6.3.2.2.7	Void.....	99
6.3.2.2.8	SIP BYE request towards the terminating MCPTT client.....	99
6.3.2.2.8.1	On-demand.....	99
6.3.2.2.8.2	Using pre-established session .....	99
6.3.2.2.9	Populate MIME bodies.....	100
6.3.2.2.10	Generating a SIP re-INVITE request towards the terminating MCPTT client.....	100
6.3.2.2.11	Generating a SIP MESSAGE request towards the terminating MCPTT client .....	100
6.3.2.3	Void.....	101
6.3.3	Controlling MCPTT function .....	101
6.3.3.1	Request initiated by the controlling MCPTT function .....	101
6.3.3.1.1	SDP offer generation .....	101
6.3.3.1.2	Sending an INVITE request .....	101
6.3.3.1.3	Receipt of a SIP response to a SIP INVITE request.....	102
6.3.3.1.3.1	Final response .....	102
6.3.3.1.4	Void.....	102
6.3.3.1.5	Sending a SIP BYE request .....	102
6.3.3.1.6	Sending a SIP re-INVITE request for MCPTT emergency group call .....	102
6.3.3.1.7	Sending a SIP INVITE request for MCPTT emergency group call .....	103
6.3.3.1.8	Sending a SIP UPDATE request for Resource-Priority header field correction.....	104

6.3.3.1.9	Generating a SIP re-INVITE request.....	105
6.3.3.1.10	Generating a SIP re-INVITE request to cancel an in-progress emergency .....	105
6.3.3.1.11	Generating a SIP MESSAGE request for notification of in-progress emergency or imminent peril status change .....	105
6.3.3.1.12	Populate mcptt-info and location-info MIME bodies for emergency alert.....	106
6.3.3.1.13	Authorisations .....	106
6.3.3.1.13.1	Determining authorisation for initiating an MCPTT emergency alert .....	106
6.3.3.1.13.2	Determining authorisation for initiating an MCPTT emergency group or private call.....	107
6.3.3.1.13.3	Determining authorisation for cancelling an MCPTT emergency alert .....	108
6.3.3.1.13.4	Determining authorisation for cancelling an MCPTT emergency call .....	109
6.3.3.1.13.5	Determining authorisation for initiating an MCPTT imminent peril call .....	109
6.3.3.1.13.6	Determining authorisation for cancelling an MCPTT imminent peril call .....	110
6.3.3.1.13.7	Sending a SIP OPTIONS request to authorise an MCPTT user at a non-controlling MCPTT function of a MCPTT group .....	110
6.3.3.1.14	Generating a SIP 403 response for priority call request rejection .....	112
6.3.3.1.15	Sending a SIP re-INVITE request for MCPTT imminent peril group call .....	112
6.3.3.1.16	Handling the expiry of timer TNG2 (in-progress emergency group call timer) .....	112
6.3.3.1.17	Validate priority request parameters.....	113
6.3.3.1.18	Sending a SIP INFO request in the dialog of a SIP request for a priority call.....	113
6.3.3.1.19	Retrieving Resource-Priority header field values.....	114
6.3.3.1.20	Generating a SIP MESSAGE request to indicate successful receipt of an emergency alert or emergency cancellation .....	114
6.3.3.1.21	Generating a SIP MESSAGE request for notification of entry into or exit from an emergency alert area .....	115
6.3.3.1.22	Generating a SIP MESSAGE request for notification of entry into or exit from a group geographic area.....	116
6.3.3.2	Requests terminated by the controlling MCPTT function.....	117
6.3.3.2.1	SDP answer generation.....	117
6.3.3.2.2	Receipt of a SIP INVITE request .....	117
6.3.3.2.3	Sending a SIP response to a SIP INVITE request .....	117
6.3.3.2.3.1	Provisional response .....	117
6.3.3.2.3.2	Final response .....	117
6.3.3.2.4	Receiving a SIP BYE request.....	118
6.3.3.3	Handling of the acknowledged call setup timer (TNG1) .....	118
6.3.3.4	Generating a SIP NOTIFY request .....	120
6.3.3.5	Handling of the group call timer (TNG3) .....	121
6.3.3.5.1	General .....	121
6.3.3.5.2	Interaction with the in-progress emergency group call timer (TNG2) .....	122
6.3.3.6	Void.....	122
6.3.4	Non-controlling MCPTT function of an MCPTT group.....	122
6.3.4.1	Request initiated by the non-controlling MCPTT function of an MCPTT group .....	122
6.3.4.1.1	SDP offer generation .....	122
6.3.4.1.2	Sending an INVITE request towards the MCPTT client .....	123
6.3.4.1.3	Sending a SIP INFO request.....	123
6.3.4.1.4	Sending an INVITE request towards the controlling MCPTT function .....	124
6.3.4.2	Requests terminated by the non-controlling MCPTT function of an MCPTT group.....	125
6.3.4.2.1	SDP answer generation.....	125
6.3.4.2.2	Sending a SIP response to the SIP INVITE request .....	125
6.3.4.2.2.1	Sending a SIP 183 (Session Progress) response.....	125
6.3.4.2.2.2	Sending a SIP 200 (OK) response.....	126
6.3.4.3	Generating a SIP NOTIFY request .....	126
6.3.4.4	Void.....	127
6.3.5	Retrieving and processing a group document .....	127
6.3.5.1	General .....	127
6.3.5.2	Rules for retrieving Group Document(s).....	127
6.3.5.3	Rules for joining a group session .....	131
6.3.5.4	Rules for initiating a prearranged group session .....	131
6.3.5.5	Determining the group members to invite.....	131
6.3.6	Affiliation check .....	132
6.3.7	Error handling.....	132
6.3.7.1	Public service identity does not exist .....	132
6.3.8	Session release policy .....	132

6.3.8.1	Session release policy for group call.....	132
6.3.8.2	Session release policy for private call .....	133
6.4	Implicit floor request .....	133
6.5	Handling of MIME bodies in a SIP message.....	134
6.6	Confidentiality and Integrity Protection .....	135
6.6.1	General.....	135
6.6.1.1	Applicability and exclusions .....	135
6.6.1.2	Performing XML content encryption .....	135
6.6.1.3	Performing integrity protection on an XML body .....	135
6.6.1.4	Verifying integrity of an XML body and decrypting XML elements .....	135
6.6.2	Confidentiality Protection.....	136
6.6.2.1	General .....	136
6.6.2.2	Keys used in confidentiality protection procedures .....	136
6.6.2.3	Procedures for sending confidentiality protected content .....	136
6.6.2.3.1	MCPTT client.....	136
6.6.2.3.2	MCPTT server.....	137
6.6.2.3.3	Content Encryption in XML elements.....	137
6.6.2.3.4	Attribute URI Encryption .....	137
6.6.2.4	Procedures for receiving confidentiality protected content.....	138
6.6.2.4.1	Determination of confidentiality protected content .....	138
6.6.2.4.2	Decrypting confidentiality protected content in XML elements .....	138
6.6.2.4.3	Decrypting confidentiality protected URIs in XML attributes .....	138
6.6.2.5	MCPTT server copying received XML content.....	138
6.6.3	Integrity Protection of XML documents .....	139
6.6.3.1	General .....	139
6.6.3.2	Keys used in integrity protection procedures .....	141
6.6.3.3	Sending integrity protected content.....	142
6.6.3.3.1	MCPTT client.....	142
6.6.3.3.2	MCPTT server.....	142
6.6.3.3.3	Integrity protection procedure .....	142
6.6.3.4	Receiving integrity protected content.....	143
6.6.3.4.1	Determination of integrity protected content.....	143
6.6.3.4.2	Verification of integrity protected content.....	143
6.7	Priority sharing .....	143
7	Registration and service authorisation .....	143
7.1	General .....	143
7.2	MCPTT client procedures .....	144
7.2.1	SIP REGISTER request for service authorisation .....	144
7.2.1AA	SIP REGISTER request without service authorisation .....	145
7.2.1A	Common SIP PUBLISH procedure .....	145
7.2.2	SIP PUBLISH request for service authorisation and MCPTT service settings.....	146
7.2.3	Sending SIP PUBLISH for MCPTT service settings only.....	147
7.2.4	Determination of MCPTT service settings .....	147
7.2.5	Receiving a CSK key download message.....	148
7.3	MCPTT server procedures .....	149
7.3.1	General.....	149
7.3.1A	Confidentiality and Integrity Protection .....	149
7.3.2	SIP REGISTER request for service authorisation .....	151
7.3.3	SIP PUBLISH request for service authorisation and service settings.....	151
7.3.4	Receiving SIP PUBLISH request for MCPTT service settings only .....	152
7.3.5	Receiving SIP PUBLISH request with "Expires=0" .....	153
7.3.6	Subscription to and notification of MCPTT service settings .....	154
7.3.6.1	Receiving subscription to MCPTT service settings .....	154
7.3.6.2	Sending notification of change of MCPTT service settings.....	154
7.3.7	Sending a CSK key download message .....	155
7.4	Coding .....	155
7.4.1	Extension of MIME types.....	155
7.4.1.1	General .....	155
7.4.1.2	Extension of application/poc-settings+xml MIME type .....	155
7.4.1.2.1	Introduction .....	155
7.4.1.2.2	Syntax .....	155

8	Pre-established session .....	156
8.1	General .....	156
8.1A	Participating MCPTT function use of resource sharing .....	157
8.2	Session establishment.....	157
8.2.1	MCPTT client procedures.....	157
8.2.2	Participating MCPTT function procedures .....	158
8.3	Session modification .....	159
8.3.1	MCPTT client procedures.....	159
8.3.1.1	MCPTT client initiated .....	159
8.3.1.2	Participating MCPTT function initiated.....	160
8.3.2	Participating MCPTT function procedures .....	160
8.3.2.1	MCPTT client initiated .....	160
8.3.2.2	Participating MCPTT function initiated.....	160
8.4	Session release.....	161
8.4.1	MCPTT client procedures.....	161
8.4.1.1	MCPTT client initiated .....	161
8.4.1.2	Participating MCPTT function initiated.....	161
8.4.2	Participating MCPTT function procedures .....	161
8.4.2.1	MCPTT client initiated .....	161
8.4.2.2	Participating MCPTT function initiated.....	162
9	Affiliation .....	162
9.1	General .....	162
9.2	Procedures .....	163
9.2.1	MCPTT client procedures.....	163
9.2.1.1	General .....	163
9.2.1.2	Affiliation status change procedure.....	163
9.2.1.3	Affiliation status determination procedure .....	164
9.2.1.4	Procedure for sending affiliation status change request in negotiated mode to target MCPTT user...165	
9.2.1.5	Procedure for receiving affiliation status change request in negotiated mode from authorized MCPTT user.....	166
9.2.1.6	Subscription to group dynamic data.....	166
9.2.2	MCPTT server procedures.....	167
9.2.2.1	General .....	167
9.2.2.2	Procedures of MCPTT server serving the MCPTT user .....	167
9.2.2.2.1	General .....	167
9.2.2.2.2	Stored information.....	167
9.2.2.2.3	Receiving affiliation status change from MCPTT client procedure .....	168
9.2.2.2.4	Receiving subscription to affiliation status procedure .....	171
9.2.2.2.5	Sending notification of change of affiliation status procedure .....	172
9.2.2.2.6	Sending affiliation status change towards MCPTT server owning MCPTT group procedure .....	172
9.2.2.2.7	Affiliation status determination from MCPTT server owning MCPTT group procedure .....	174
9.2.2.2.8	Procedure for authorizing affiliation status change request in negotiated mode sent to served MCPTT user .....	176
9.2.2.2.9	Forwarding affiliation status change towards another MCPTT user procedure .....	177
9.2.2.2.10	Forwarding subscription to affiliation status towards another MCPTT user procedure .....	177
9.2.2.2.11	Affiliation status determination .....	178
9.2.2.2.12	Affiliation status change by implicit affiliation.....	179
9.2.2.2.13	Implicit affiliation status change completion.....	180
9.2.2.2.14	Implicit affiliation status change cancellation .....	180
9.2.2.2.15	Implicit affiliation to configured groups procedure .....	180
9.2.2.2.16	Forwarding subscription to group dynamic data towards the controlling MCPTT server procedure .....	182
9.2.2.3	Procedures of MCPTT server owning the MCPTT group .....	183
9.2.2.3.1	General .....	183
9.2.2.3.2	Stored information.....	183
9.2.2.3.3	Receiving group affiliation status change procedure .....	184
9.2.2.3.4	Receiving subscription to affiliation status procedure .....	185
9.2.2.3.5	Sending notification of change of affiliation status procedure .....	186
9.2.2.3.6	Implicit affiliation eligibility check procedure .....	186
9.2.2.3.7	Affiliation status change by implicit affiliation procedure .....	187
9.2.2.3.8	Affiliation eligibility check procedure.....	187

9.2.2.3.9	Receiving subscription to group dynamic data procedure .....	188
9.2.2.3.9	Sending notification of change of group dynamic data procedure .....	189
9.3	Coding .....	189
9.3.1	Extension of application/pid+xml MIME type .....	189
9.3.1.1	Introduction .....	189
9.3.1.2	Syntax .....	189
9.3.2	Extension of application/simple-filter+xml MIME type .....	192
9.3.2.1	Introduction .....	192
9.3.2.2	Syntax .....	192
9A	Functional Alias .....	194
9A.1	General .....	194
9A.2	Procedures .....	194
9A.2.1	MCPTT client procedures .....	194
9A.2.1.1	General .....	194
9A.2.1.2	Functional alias status change procedure .....	194
9A.2.1.3	Functional alias status determination procedure .....	195
9A.2.2	MCPTT server procedures .....	196
9A.2.2.1	General .....	196
9A.2.2.2	Procedures of MCPTT server serving the MCPTT user .....	196
9A.2.2.2.1	General .....	196
9A.2.2.2.2	Stored information .....	197
9A.2.2.2.3	Receiving functional alias status change from MCPTT client procedure .....	197
9A.2.2.2.4	Receiving subscription to functional alias status procedure .....	199
9A.2.2.2.5	Sending notification of change of functional alias status procedure .....	200
9A.2.2.2.6	Sending functional alias status change towards MCPTT server owning the functional alias procedure .....	201
9A.2.2.2.7	Functional alias status determination from MCPTT server owning functional alias procedure .....	202
9A.2.2.3	Procedures of MCPTT server owning the Functional alias .....	204
9A.2.2.3.1	General .....	204
9A.2.2.3.2	Stored information .....	204
9A.2.2.3.3	Receiving functional alias status change procedure .....	205
9A.2.2.3.4	Receiving subscription to functional alias status procedure .....	206
9A.2.2.3.5	Sending notification of change of functional alias status procedure .....	207
9A.3	Coding .....	208
9A.3.1	Extension of application/pid+xml MIME type .....	208
9A.3.1.1	Introduction .....	208
9A.3.1.2	Syntax .....	208
9A.3.2	Extension of application/simple-filter+xml MIME type .....	209
9A.3.2.1	Introduction .....	209
9A.3.2.2	Syntax .....	209
10	Group call .....	210
10.0	General .....	210
10.1	On-network group call .....	211
10.1.1	Prearranged group call .....	211
10.1.1.1	General .....	211
10.1.1.2	MCPTT client procedures .....	211
10.1.1.2.1	On-demand prearranged group call .....	211
10.1.1.2.1.1	Client originating procedures .....	211
10.1.1.2.1.2	Client terminating procedures .....	213
10.1.1.2.1.3	MCPTT upgrade to in-progress emergency or imminent peril .....	214
10.1.1.2.1.4	MCPTT in-progress emergency cancel .....	215
10.1.1.2.1.5	MCPTT in-progress imminent peril cancel .....	216
10.1.1.2.1.6	MCPTT client receives SIP re-INVITE request .....	217
10.1.1.2.2	Prearranged group call using pre-established session .....	219
10.1.1.2.2.1	Client originating procedures .....	219
10.1.1.2.2.2	Client terminating procedures .....	219
10.1.1.2.3	End group call .....	220
10.1.1.2.3.1	Client originating procedures on-demand .....	220
10.1.1.2.3.2	Client originating procedures using pre-established session .....	220
10.1.1.2.3.3	Client terminating procedures .....	220

10.1.1.2.4	Re-join procedure .....	220
10.1.1.2.4.1	On demand session establishment.....	220
10.1.1.2.4.2	Pre-established session.....	220
10.1.1.3	Participating MCPTT function procedures .....	220
10.1.1.3.1	Originating procedures .....	220
10.1.1.3.1.1	On demand prearranged group call .....	220
10.1.1.3.1.2	Prearranged group call using pre-established session .....	223
10.1.1.3.1.3	Reception of a SIP re-INVITE request from served MCPTT client .....	227
10.1.1.3.2	Terminating Procedures.....	228
10.1.1.3.3	End group call at the originating participating MCPTT function .....	229
10.1.1.3.3.1	Receipt of SIP BYE request for ending group call on-demand .....	229
10.1.1.3.3.2	Receipt of SIP REFER "BYE" request for ending group call using pre-established session....	229
10.1.1.3.4	End group call at the terminating participating MCPTT function .....	229
10.1.1.3.4.1	Receipt of SIP BYE request for private call on-demand .....	229
10.1.1.3.4.2	Receipt of SIP BYE request when ongoing pre-established session .....	229
10.1.1.3.5	Re-join procedures.....	229
10.1.1.3.5.1	Originating procedures - on demand prearranged group call.....	229
10.1.1.3.5.2	Originating procedures - prearranged group call using pre-established session .....	229
10.1.1.3.6	Reception of a SIP re-INVITE request for terminating MCPTT client for priority call.....	229
10.1.1.4	Controlling MCPTT function procedures .....	230
10.1.1.4.1	Originating Procedures .....	230
10.1.1.4.1.1	INVITE targeted to an MCPTT client .....	230
10.1.1.4.1.2	INVITE targeted to the non-controlling MCPTT function of an MCPTT group.....	231
10.1.1.4.2	Terminating Procedures.....	232
10.1.1.4.3	End group call at the terminating controlling MCPTT function .....	241
10.1.1.4.4	End group call initiated by the controlling MCPTT function.....	241
10.1.1.4.4.1	General.....	241
10.1.1.4.4.2	SIP BYE request for releasing MCPTT session for a group call .....	241
10.1.1.4.4.3	SIP BYE request toward a MCPTT client .....	241
10.1.1.4.5	Re-join procedures.....	241
10.1.1.4.5.1	Terminating procedures .....	241
10.1.1.4.6	Late call entry initiated by controlling MCPTT function .....	242
10.1.1.4.7	Receipt of a SIP re-INVITE request.....	242
10.1.1.4.8	Handling of a SIP re-INVITE request for imminent peril session.....	246
10.1.1.5	Non-controlling function of an MCPTT group procedures.....	247
10.1.1.5.1	Originating procedures .....	247
10.1.1.5.2	Terminating procedures.....	248
10.1.1.5.2.1	General.....	248
10.1.1.5.2.2	Initiating a prearranged group call.....	248
10.1.1.5.2.3	Joining an ongoing prearranged group call.....	250
10.1.1.5.2.4	Splitting an ongoing prearranged group call.....	251
10.1.1.5.3	Rejoin procedures .....	252
10.1.1.5.3.1	Terminating procedures .....	252
10.1.1.5.3.2	Late call entry initiated by non-controlling MCPTT function .....	252
10.1.1.5.4	SIP OPTIONS request authorization procedure .....	252
10.1.1.5.5	Initiating a temporary group session.....	253
10.1.2	Chat group (restricted) call .....	255
10.1.2.1	General .....	255
10.1.2.2	MCPTT client procedures .....	255
10.1.2.2.1	On-demand chat group call.....	255
10.1.2.2.1.1	Procedure for initiating a chat MCPTT group session and procedure for joining a chat MCPTT group session .....	255
10.1.2.2.1.2	MCPTT client receives SIP re-INVITE request .....	256
10.1.2.2.1.3	MCPTT in-progress emergency cancel.....	258
10.1.2.2.1.4	MCPTT upgrade to in-progress emergency or imminent peril .....	259
10.1.2.2.1.5	MCPTT in-progress imminent peril cancel.....	260
10.1.2.2.1.6	MCPTT client receives a SIP INVITE request for an MCPTT group call.....	261
10.1.2.2.2	Chat group call within a pre-established session .....	263
10.1.2.2.2.1	Procedure for initiating a chat MCPTT group session and procedure for joining a chat MCPTT group session .....	263
10.1.2.2.3	End group call .....	265
10.1.2.2.3.1	Client originating procedures on-demand .....	265

10.1.2.2.3.2	Client originating procedures using pre-established session.....	265
10.1.2.2.3.3	Client terminating procedures.....	265
10.1.2.3	Participating MCPTT function procedures .....	265
10.1.2.3.1	On-demand chat group call.....	265
10.1.2.3.1.1	MCPTT chat session establishment .....	265
10.1.2.3.1.2	Reception of a SIP re-INVITE request from served MCPTT client .....	268
10.1.2.3.1.3	Reception of a SIP INVITE request for terminating MCPTT client.....	269
10.1.2.3.1.4	Reception of a SIP re-INVITE request for terminating MCPTT client .....	270
10.1.2.3.2	Chat group call within a pre-established session .....	271
10.1.2.3.2.1	MCPTT chat session establishment .....	271
10.1.2.3.2.2	MCPTT chat session establishment for terminating user within a pre-established session .....	274
10.1.2.3.3	End group call at the originating participating MCPTT function .....	274
10.1.2.3.3.1	Receipt of SIP BYE request for ending on-demand chat session .....	274
10.1.2.3.3.2	Receipt of SIP REFER "BYE" request for ending chat session using pre-established session.....	275
10.1.2.3.4	End group call at the terminating participating MCPTT function .....	275
10.1.2.3.4.1	Receipt of SIP BYE request for on-demand chat session .....	275
10.1.2.3.4.2	Receipt of SIP BYE request for ongoing pre-established session.....	275
10.1.2.4	Controlling MCPTT function procedures .....	275
10.1.2.4.1	On-demand chat group call.....	275
10.1.2.4.1.1	Procedure for establishing an MCPTT chat session and procedure for joining an established MCPTT chat session .....	275
10.1.2.4.1.2	Receipt of a SIP re-INVITE request .....	279
10.1.2.4.1.3	Handling of a SIP re-INVITE request for imminent peril session .....	283
10.1.2.4.2	End group call at the terminating controlling MCPTT function.....	285
10.1.2.4.3	End group call initiated by the controlling MCPTT function.....	285
10.1.2.4.3.1	General.....	285
10.1.2.4.3.2	SIP BYE request for releasing MCPTT session for a group call .....	285
10.1.2.4.3.3	SIP BYE request toward a MCPTT client .....	285
10.1.2.5	Non-controlling function of an MCPTT group procedures.....	286
10.1.2.5.1	Terminating procedures.....	286
10.1.2.5.1.1	General.....	286
10.1.2.5.1.2	Initiating a chat group session.....	286
10.1.2.5.1.3	Joining an ongoing chat group call.....	287
10.1.2.5.1.4	Splitting an ongoing chat group call .....	287
10.1.2.5.1.5	MCPTT client joining the temporary group chat session.....	288
10.1.2.5.1.6	Receipt of a SIP re-INVITE request from an MCPTT client.....	288
10.1.2.5.1.7	SIP OPTIONS request authorization procedure .....	288
10.1.2.5.1.8	Initiating a temporary group session.....	288
10.1.3	Subscription to the conference event package .....	289
10.1.3.1	General.....	289
10.1.3.2	MCPTT client .....	290
10.1.3.3	Participating MCPTT function.....	291
10.1.3.4	Controlling MCPTT function.....	292
10.1.3.4.1	Receiving a subscription to the conference event package.....	292
10.1.3.4.2	Sending notifications to the conference event package .....	292
10.1.3.4.3	Sending subscriptions to the conference event package .....	293
10.1.3.4.4	Terminating a subscription .....	294
10.1.3.5	Non-controlling MCPTT function .....	294
10.1.3.5.1	Receiving subscriptions to the conference event package .....	294
10.1.3.5.2	Sending notifications to the conference event package .....	295
10.1.3.5.3	Sending a subscription to the conference event package .....	295
10.1.3.5.4	Terminating a subscription .....	296
10.1.4	Remote change of an MCPTT user's selected group .....	296
10.1.4.1	General.....	296
10.1.4.2	Client procedures .....	296
10.1.4.2.1	Remote selected group change initiation .....	296
10.1.4.2.2	Target client procedures for handling remote selected group change request .....	297
10.1.4.3	Participating MCPTT function procedures .....	298
10.1.4.3.1	Originating procedures.....	298
10.1.4.3.2	Terminating procedures.....	300
10.1.4.4	Controlling MCPTT function procedures .....	300

10.1.5	Remotely initiated group call.....	301
10.1.5.1	General .....	301
10.1.5.2	Client procedures .....	302
10.1.5.2.1	Remotely initiated group call initiation request procedures .....	302
10.1.5.2.2	Remote client procedures for handling remotely initiated group call request .....	304
10.1.5.3	Participating MCPTT function procedures .....	305
10.1.5.3.1	Originating procedures .....	305
10.1.5.3.2	Terminating procedures .....	306
10.1.5.4	Controlling MCPTT function procedures .....	306
10.2	Off-network group call .....	308
10.2.1	General.....	308
10.2.1.1	Common Procedures .....	308
10.2.1.1.1	MONP message transport.....	308
10.2.1.1.2	Session description .....	308
10.2.2	Basic call control .....	309
10.2.2.1	General .....	309
10.2.2.2	Basic call control state machine.....	309
10.2.2.3	Call Control states.....	310
10.2.2.3.1	S1: start-stop.....	310
10.2.2.3.2	S2: waiting for call announcement .....	310
10.2.2.3.3	S3: part of ongoing call .....	310
10.2.2.3.4	S4: pending user action without confirm indication .....	310
10.2.2.3.5	S5: pending user action with confirm indication .....	310
10.2.2.3.6	S6: ignoring incoming call announcements.....	310
10.2.2.3.7	S7: waiting for call announcement after call release .....	310
10.2.2.4	Procedures.....	311
10.2.2.4.1	General .....	311
10.2.2.4.1.1	Call announcement timer calculation.....	311
10.2.2.4.1.1.1	Periodic call announcement timer calculation.....	311
10.2.2.4.1.1.2	Call announcement timer calculation after CALL PROBE.....	311
10.2.2.4.1.2	Max duration timer calculation .....	311
10.2.2.4.2	Call Probe .....	311
10.2.2.4.2.1	Call probe initiation .....	311
10.2.2.4.2.2	Call probe retransmission .....	312
10.2.2.4.2.3	Receiving GROUP CALL PROBE message when participating in the ongoing call.....	312
10.2.2.4.3	Call setup .....	312
10.2.2.4.3.1	Not receiving any response to GROUP CALL PROBE message .....	312
10.2.2.4.3.2	Receiving a GROUP CALL ANNOUNCEMENT message.....	313
10.2.2.4.3.3	Receiving a GROUP CALL ANNOUNCEMENT message when not participating in the ongoing call.....	313
10.2.2.4.3.4	MCPTT user accepts the terminating call with confirm indication .....	314
10.2.2.4.3.5	MCPTT user accepts the terminating call without confirm indication .....	315
10.2.2.4.3.6	Receiving GROUP CALL ACCEPT message.....	315
10.2.2.4.3.7	MCPTT user rejects the terminating call .....	315
10.2.2.4.3.8	MCPTT user does not act on terminating call .....	315
10.2.2.4.4	Periodic group call announcement.....	316
10.2.2.4.4.1	Sending periodic call announcement .....	316
10.2.2.4.4.2	Receiving periodic call announcement .....	316
10.2.2.4.5	Call release .....	317
10.2.2.4.5.1	MCPTT user leaves the call when GROUP CALL ANNOUNCEMENT was sent or received.....	317
10.2.2.4.5.2	Receiving GROUP CALL ANNOUNCEMENT message for rejected or released call .....	317
10.2.2.4.5.3	MCPTT user initiates originating call for rejected or released call .....	317
10.2.2.4.5.4	No GROUP CALL ANNOUNCEMENT messages for rejected or released call .....	318
10.2.2.4.5.5	MCPTT user leaves the call when GROUP CALL PROBE was sent .....	318
10.2.2.4.5.6	MCPTT user initiates originating call for released call .....	318
10.2.2.4.5.7	Receiving GROUP CALL ANNOUNCEMENT message for released call .....	318
10.2.2.4.5.8	No GROUP CALL ANNOUNCEMENT messages for released call .....	319
10.2.2.4.5.9	Max duration reached .....	319
10.2.2.4.6	Merge of calls .....	319
10.2.2.4.6.1	Merge of two calls .....	319
10.2.2.4.7	Error handling.....	320