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Contents

Intellectual Property Rights 2
Foreword 2
Modal verbs terminology 2
Foreword 10
1 Scope 11
2 References 11
3 Definitions, symbols and abbreviations 12
3.1 Definitions 12
3.2 Symbols 13
3.3 Abbreviations 13
4 Introduction 14
5 Architectural requirements 15
5.1 Media routing requirements 15
5.2 Requirements for user identity management 15
5.3 MCPTT group affiliation and MCPTT group de-affiliation 15
5.4 MCPTT call requirements 15
5.4.1 General 15
5.4.2 Group call requirements 15
5.5 GCS AS requirements for the MCPTT service 15
5.6 Group selection 15
5.7 Bearer management 16
5.7.1 General 16
5.7.2 EPS bearer considerations 16
5.7.2.1 Void 16
5.7.2.2 Void 16
5.7.3 EPS unicast bearer considerations for MCPTT 16
5.7.4 MBMS bearer management 16
5.8 MCPTT system interconnect requirements 17
6 Involved business relationships 17
7 Functional model 17
7.1 General 17
7.2 Description of the planes 17
7.3 Functional model description 17
7.3.1 On-network functional model 17
7.3.2 Off-network functional model 18
7.4 Functional entities description 19
7.4.1 General 19
7.4.2 Application plane of MCPTT service 19
7.4.2.1 General 19
7.4.2.2 Common services core 19
7.4.2.3 MCPTT application service 19
7.4.2.3.1 MCPTT client 19
7.4.2.3.2 MCPTT server 19
7.4.2.3.3 Floor participant 21
7.4.2.3.4 Floor control server 21
7.4.2.3.5 Media distribution function 21
7.4.2.3.6 Media mixer 21
7.4.2.3.7 MCPTT user database 21
7.4.3 Signalling control plane 21
7.5 Reference points 21
7.5.1 General reference point principle 21
7.5.2 Application plane of MCPTT service 22

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7.5.2.1 General 22
7.5.2.2 Reference point MCPTT-1 (between the MCPTT client and the MCPTT server) 22
7.5.2.3 Reference point MCPTT-2 (between the MCPTT server and the MCPTT user database) 22
7.5.2.4 Reference point MCPTT-3 (between the MCPTT server and the MCPTT server) 22
7.5.2.5 Reference point MCPTT-4 (unicast between the floor control server and the floor participant) 22
7.5.2.6 Reference point MCPTT-5 (between the media distribution function and the EPS) 22
7.5.2.7 Reference point MCPTT-6 (between the MCPTT server and the EPS) 23
7.5.2.8 Reference point MCPTT-7 (unicast between the media distribution function and the media mixer) 23
7.5.2.9 Reference point MCPTT-8 (multicast between the media distribution function and the media mixer) 23
7.5.2.10 Reference point MCPTT-9 (multicast between the floor control server and the floor participant) 23
7.5.2.11 Reference point IWF-1 (between the MCPTT server and the interworking function to legacy systems) 23
7.5.2.12 Reference points of common services core used in the MCPTT service 23

8 Identities 23

9 Application of functional model to deployments 23

10 Procedures and information flows 24
10.1 MCPTT service configuration 24
10.2 User authentication and authorization for MCPTT service 24
10.3 Affiliation and de-affiliation to/from MCPTT group(s) 24
10.4 MCPTT group selection 25
10.4.1 General 25
10.4.2 Information flows for group selection 25
10.4.2.1 Group selection change request 25
10.4.2.2 Group selection change response 25
10.4.2.3 Group selection change notification 25
10.4.3 Authorized user remotely changes another MCPTT user's selected MCPTT group – mandatory mode 26
10.5 Pre-established session (on-network) 27
10.5.1 General 27
10.5.2 Information flows for pre-established session 27
10.5.2.1 Pre-established session establishment 27
10.5.2.2 Pre-established session modification 28
10.5.2.3 Pre-established session release - client initiated 28
10.5.2.4 Pre-established session release - server initiated 28
10.5.2.5 Pre-established session call connect request 29
10.5.2.6 Pre-established session call disconnect request 29
10.5.3 Procedures 29
10.5.3.1 General 29
10.5.3.2 Call connect and disconnect procedures using pre-established session 30
10.5.3.2.1 Call connect over unicast 30
10.5.3.2.2 Call disconnect over unicast 30
10.6 Group call 31
10.6.1 General 31
10.6.2 On-network group call 31
10.6.2.1 General 31
10.6.2.2 Information flows for group call in on-network 31
10.6.2.2.1 MCPTT emergency group call request 31
10.6.2.2.1a MCPTT emergency group call response 31
10.6.2.2.2 MCPTT emergency group call cancel request 32
10.6.2.2.2a MCPTT emergency group call cancel response 32
10.6.2.2.3 MCPTT emergency alert request 32
10.6.2.2.3a MCPTT emergency alert response 33
10.6.2.2.3b MCPTT emergency alert area trigger 33
10.6.2.2.4 MCPTT emergency state cancel request 33
10.6.2.2.4a MCPTT emergency state cancel response 33
10.6.2.2.5 MCPTT imminent peril group call request 33
10.6.2.2.5a MCPTT imminent peril group call response 34
10.6.2.2.6 MCPTT imminent peril group call cancel request 34
10.6.2.2.6a MCPTT imminent peril group call cancel response 34

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10.6.2.2.7 Group call request (MCPTT client – MCPTT server) 34
10.6.2.2.8 Group call request (MCPTT server – MCPTT server) 35
10.6.2.2.9 Group call request (MCPTT server – MCPTT client) 35
10.6.2.2.10 Group call response (MCPTT server – MCPTT client) 36
10.6.2.2.11 Group call response (MCPTT server – MCPTT server) 36
10.6.2.2.12 Group call response (MCPTT client – MCPTT server) 36
10.6.2.2.13 Group call notify (MCPTT server – MCPTT client) 37
10.6.2.2.14 Group call release request (MCPTT server – MCPTT client) 37
10.6.2.2.14a Group call release request (MCPTT client – MCPTT server) 37
10.6.2.2.15 Group call release request (MCPTT server – MCPTT server) 38
10.6.2.2.16 Group call release response (MCPTT client – MCPTT server) 38
10.6.2.2.17 Group call release response (MCPTT server – MCPTT server) 38
10.6.2.2.18 Group call rejoin request (MCPTT client – MCPTT server) 38
10.6.2.2.19 Group call rejoin response (MCPTT server – MCPTT client) 39
10.6.2.2.20 Group join request (MCPTT client – MCPTT server) 39
10.6.2.2.21 Group join response (MCPTT server – MCPTT client) 39
10.6.2.2.22 Group call leave request (MCPTT server – MCPTT client) 40
10.6.2.2.23 Group call leave response (MCPTT client – MCPTT server) 40
10.6.2.2.24 Group interrogate request (MCPTT server – MCPTT server) 40
10.6.2.2.25 Group interrogate response (MCPTT server – MCPTT server) 40
10.6.2.2.26 Group-broadcast group call request (MCPTT client – MCPTT server) 41
10.6.2.2.27 Group-broadcast group call request (MCPTT server – MCPTT client) 41
10.6.2.2.28 Group-broadcast group call response (MCPTT client – MCPTT server) 41
10.6.2.2.29 Group-broadcast group call response (MCPTT server – MCPTT client) 42
10.6.2.2.30 Group-broadcast group call release request (MCPTT client – MCPTT server) 42
10.6.2.2.31 Group-broadcast group call release request (MCPTT server – MCPTT client) 42
10.6.2.2.32 Group-broadcast group call release response (MCPTT server – MCPTT client) 42
10.6.2.2.33 Group-broadcast group call release response (MCPTT client – MCPTT server) 43
10.6.2.3 Group call within one MCPTT system 43
10.6.2.3.1 Group call models 43
10.6.2.3.1.1 Pre-arranged group call 43
10.6.2.3.1.2 Chat group call 48
10.6.2.3.2 Exiting group call due to de-affiliation 52
10.6.2.4 Group call involving groups from multiple MCPTT systems 53
10.6.2.4.1 Group call for temporary groups across multiple MCPTT systems 53
10.6.2.4.1.1 Group call setup 53
10.6.2.4.1.2 Group call release 56
10.6.2.4.2 Group call for temporary group formed by group regroup procedure involving multiple MCPTT systems via trusted mode 57
10.6.2.4.3 Group call for an MCPTT group defined in the partner MCPTT system 59
10.6.2.4.3.1 Group call setup procedure – initiating side 59
10.6.2.4.3.2 Group call setup – terminating side 60
10.6.2.4.4 Merging of groups involving multiple MCPTT systems 60
10.6.2.5 Broadcast group call 61
10.6.2.5.1 General 61
10.6.2.5.2 Common broadcast group call procedure 62
10.6.2.5.2.1 Group-broadcast group call procedure 62
10.6.2.5.2.2 Group-broadcast group call procedure when a subordinate group has an on-going MCPTT emergency group call 64
10.6.2.5.2.3 Group-broadcast group call release procedure 65
10.6.2.5.3 Temporary group – broadcast group call procedure 66
10.6.2.6 Emergency and imminent peril procedures 68
10.6.2.6.1 MCPTT emergency group call 68
10.6.2.6.1.1 MCPTT emergency group call commencement 68
10.6.2.6.1.2 MCPTT group call upgraded to an MCPTT emergency group call 70
10.6.2.6.1.3 MCPTT emergency group call cancel 72
10.6.2.6.2 MCPTT imminent peril group call 74
10.6.2.6.2.1 MCPTT imminent peril group call commencement 74
10.6.2.6.2.2 Imminent peril group call upgrade 76
10.6.2.6.2.3 MCPTT imminent peril group call cancel 77
10.6.2.6.3 MCPTT emergency alert 78
10.6.2.6.3.1 MCPTT emergency alert initiation 79

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10.6.2.6.3.2 MCPTT emergency state cancel 81
10.6.2.6.3.3 Entering MCPTT emergency alert area 82
10.6.2.7 Location of current talker 83
10.6.2.8 Temporary group call – user regroup 84
10.6.2.8.1 General 84
10.6.2.8.2 Group call setup 84
10.6.2.8.3 Group call end (by authorized user) 85
10.6.3 Off-network group call 87
10.6.3.1 General 87
10.6.3.2 Information flows for group call in off-network 87
10.6.3.2.1 Group call announcement 87
10.6.3.2.2 MCPTT upgrade to emergency call 87
10.6.3.2.3 MCPTT emergency group cancel 88
10.6.3.2.4 Response 88
10.6.3.2.5 MCPTT emergency alert request 88
10.6.3.2.6 MCPTT emergency alert cancel 88
10.6.3.2.7 MCPTT upgrade to imminent peril call 89
10.6.3.2.8 MCPTT imminent peril group call cancel 89
10.6.3.3 Group call setup 89
10.6.3.4 Passive join to group call 90
10.6.3.5 Join to ongoing group call when new entry member initiates the call with on-going group call id 91
10.6.3.6 Immediate group call announcement to join an ongoing group call 92
10.6.3.7 Group call release due to inactivity 93
10.6.3.8 Broadcast group call 93
10.6.3.9 Emergency and imminent peril procedures 94
10.6.3.9.1 Emergency group call 94
10.6.3.9.2 MCPTT imminent peril 95
10.6.3.9.3 MCPTT emergency alert 95
10.6.3.9.3.1 MCPTT emergency alert initiation 95
10.6.3.9.3.2 MCPTT emergency state cancel 97
10.7 Private call 97
10.7.1 General 97
10.7.2 Private call in on-network 98
10.7.2.1 Information flows for private call in on-network 98
10.7.2.1.1 MCPTT private call request (MCPTT client – MCPTT server) 98
10.7.2.1.2 MCPTT private call request (MCPTT server – MCPTT server) 98
10.7.2.1.2a MCPTT private call request (MCPTT server – MCPTT client) 98
10.7.2.1.3 MCPTT private call response (MCPTT client – MCPTT server) 99
10.7.2.1.4 MCPTT private call response 99
10.7.2.1.4a MCPTT call end request 99
10.7.2.1.5 MCPTT emergency private call request (MCPTT client to MCPTT server) 100
10.7.2.1.5a MCPTT emergency private call request (MCPTT server to MCPTT client) 100
10.7.2.1.6 MCPTT progress indication 100
10.7.2.1.7 MCPTT ringing 101
10.7.2.2 Private call within one MCPTT system 101
10.7.2.2.1 Private call setup in automatic commencement mode 101
10.7.2.2.2 Private call setup in manual commencement mode 102
10.7.2.2.2.1 Description 102
10.7.2.2.2.2 Procedure 102
10.7.2.2.3 Private call release 104
10.7.2.2.3.1 Client initiated 104
10.7.2.2.3.2 Server initiated 105
10.7.2.3 Private call within several MCPTT systems 106
10.7.2.3.1 Private call setup in automatic commencement mode – MCPTT users in multiple MCPTT systems 106
10.7.2.3.2 Private call setup in manual commencement mode – MCPTT users in multiple MCPTT systems 108
10.7.2.3.3 Private call release – MCPTT users in multiple MCPTT systems 110
10.7.2.4 MCPTT emergency private call 110
10.7.2.4.1 MCPTT emergency private call commencement 110
10.7.2.4.2 MCPTT private call emergency upgrade 112
10.7.3 Private call in off-network 113

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10.7.3.1 Information flows for private call in off-network 113
10.7.3.1.1 Call setup request 113
10.7.3.1.2 Call setup response 113
10.7.3.1.3 Call release request 113
10.7.3.1.4 Call release response 113
10.7.3.2 Use of ProSe capability for private call 113
10.7.3.3 Private call setup in automatic commencement mode 114
10.7.3.4 Private call setup in manual commencement mode 115
10.7.3.5 Private call release 116
10.7.3.6 MCPTT emergency private call 117
10.7.4 MCPTT private call call-back request 117
10.7.4.1 Information flows for MCPTT private call call-back request 117
10.7.4.1.1 MCPTT private call call-back request 117
10.7.4.1.2 MCPTT private call call-back response 117
10.7.4.1.3 MCPTT private call call-back cancel request 117
10.7.4.1.4 MCPTT private call call-back cancel response 118
10.7.4.2 MCPTT private call call-back request within one MCPTT system 118
10.7.4.3 MCPTT private call call-back cancel request within one MCPTT system 119
10.7.4.4 MCPTT private call call-back request fulfillment within one MCPTT system 120
10.8 Simultaneous session for MCPTT calls (on-network) 121
10.8.1 General 121
10.9 Floor control 121
10.9.1 Floor control for on-network MCPTT service 121
10.9.1.1 General 121
10.9.1.2 Information flows for floor control for on-network 121
10.9.1.2.1 General 121
10.9.1.2.2 Floor request 122
10.9.1.2.3 Floor granted 122
10.9.1.2.4 Floor rejected 122
10.9.1.2.5 Floor request cancel 123
10.9.1.2.6 Floor request cancel response 123
10.9.1.2.7 Floor request cancel notify 123
10.9.1.2.8 Floor idle 123
10.9.1.2.9 Floor release 124
10.9.1.2.10 Floor taken 124
10.9.1.2.11 Floor revoked 124
10.9.1.2.12 Floor acknowledgement 124
10.9.1.2.13 Queue position request 124
10.9.1.2.14 Queue position info 125
10.9.1.3 Floor control within one MCPTT system 125
10.9.1.3.1 Floor request, floor granted and floor taken during an MCPTT session 125
10.9.1.3.2 Floor override 127
10.9.1.3.2.1 Floor override using floor revoked (also floor rejected) during an MCPTT session 127
10.9.1.3.2.2 Floor override without using floor revoked during an MCPTT session 128
10.9.1.3.3 Queue position during an MCPTT session 129
10.9.1.3.4 Floor request cancellation from the floor request queue 130
10.9.1.3.4.1 Floor request cancellation from the queue – MCPTT user initiated 130
10.9.1.3.4.2 Floor request cancellation from the queue - floor control server initiated 131
10.9.1.4 Floor control involving groups from multiple MCPTT systems 132
10.9.1.4.1 Partner MCPTT system routes all floor control messages to primary MCPTT system's floor control server 132
10.9.1.4.2 Partner MCPTT system performs filtering of floor control messages entering and leaving the partner MCPTT system 134
10.9.1.5 Floor control for audio cut-in enabled group 137
10.9.2 Floor control for off-network MCPTT service 138
10.9.2.1 General 138
10.9.2.2 Information flows for floor control for off-network 139
10.9.2.2.1 General 139
10.9.2.2.2 Floor granted 139
10.9.2.3 Floor control during silence 139
10.9.2.3.1 Successful floor taken (No floor contention) 139
10.9.2.4 Simultaneous floor requests 140

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10.9.2.5 Floor request during speaking with queue 141
10.9.2.6 Floor request during speaking without queue 142
10.9.2.7 Override 143
10.9.2.8 Floor queue status 144
10.10 Use of MBMS transmission (on-network) 145
10.10.1 Information flows for MBMS Transmission 145
10.10.1.1 MapGroupToBearer 145
10.10.1.2 UnmapGroupFromBearer 146
10.10.1.3 Application group paging 146
10.10.2 Use of pre-established MBMS bearers 146
10.10.3 Use of dynamic MBMS bearer establishment 146
10.10.4 Call connect and disconnect over MBMS 146
10.10.4.1 General 146
10.10.4.2 Procedure 147
10.10.4.2.1 Call connect over MBMS 147
10.10.4.2.2 Call disconnect over MBMS 148
10.10.5 Switching from MBMS bearer to unicast bearer 148
10.10.6 Enhanced MCPTT group call setup procedure with MBMS bearer 149
10.10.6.1 Description 149
10.10.6.2 Procedure 149
10.11 MCPTT resource management (on-network) 150
10.11.1 General 150
10.11.2 Request for unicast resources at session establishment 151
10.11.3 Request for modification of unicast resources 152
10.11.4 Management of multicast media bearers 153
10.11.5 Request for resources with shared priority 153
10.11.5.1 General 153
10.11.5.2 Procedure 153
10.12 MCPTT media plane transmissions with partner MCPTT systems (on-network) 154
10.13 Location information (on-network) 156
10.14 Ambient listening call 156
10.14.1 General 156
10.14.2 Information flows for ambient listening call 156
10.14.2.1 Ambient listening call request 156
10.14.2.2 Ambient listening call response 157
10.14.2.3 Ambient listening call release request 157
10.14.2.4 Ambient listening call release response 157
10.14.2.5 Ambient listening call release notification 158
10.14.3 Ambient listening call procedures 158
10.14.3.1 Remotely initiated ambient listening call setup 158
10.14.3.2 Locally initiated ambient listening call setup 159
10.14.3.3 Ambient listening call release – server initiated 160
10.14.3.4 Remotely initiated ambient listening call release – "listening" user initiated 161
10.14.3.5 Ambient listening call release – "listened to" user initiated 161
10.15 First-to-answer call setup 162
10.15.1 Description 162
10.15.2 Information flows for first-to-answer call 162
10.15.3 Procedure 162
10.16 Remotely initiated MCPTT call 164
10.16.1 General 164
10.16.2 Information flows for remotely initiated MCPTT call 165
10.16.2.1 Remotely initiated MCPTT call request 165
10.16.2.2 Remotely initiated MCPTT call response 165
10.16.3 Procedure 165
10.16.3.1 Remotely initiated MCPTT call request 165
10.17 Support for multiple devices 167
10.17.1 General 167

Annex A (normative): MCPTT related configuration data 168

A.1 General 168

A.2 MCPTT UE configuration data 168

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A.3 MCPTT user profile configuration data 169
A.4 MCPTT related group configuration data 176
A.5 MCPTT service configuration data 179
Annex B (informative): Local UE settings for MCPTT 182
B.1 Local UE settings for MCPTT 182
Annex C (informative): Change history 183
History 186

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Foreword

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

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

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where:

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

This document specifies the functional architecture, procedures and information flows needed to support the mission critical push to talk (MCPTT) service. The MCPTT service utilizes the common functional architecture to support MC services over LTE including the common services core defined in 3GPP TS 23.280 [16].Support for both MCPTT group calls and MCPTT private calls operating in on-network and off-network modes of operation is specified.

The corresponding service requirements are defined in 3GPP TS 22.179 [2] and 3GPP TS 22.280 [17].

The present document is applicable primarily to MCPTT voice service using E-UTRAN access based on the EPC architecture defined in 3GPP TS 23.401 [8]. Certain application functions of the MCPTT service such as dispatch and administrative functions could also be supported via non-3GPP access networks but no additional functionality is specified to support non-3GPP access.

The MCPTT service requires preferential handling compared to normal telecommunication services e.g. in support of police or fire brigade including the handling of prioritised MCPTT calls for emergency and imminent threats.

The MCPTT service can be used for public safety applications and also for general commercial applications e.g. utility companies and railways.

In the present document, MCPTT calls between MCPTT users on different MCPTT systems are considered.

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*.

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[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.179: "Mission Critical Push to Talk (MCPTT) over LTE"; Stage 1.

[3] 3GPP TS 23.002: "Network Architecture".

[4] 3GPP TS 23.203: "Policy and charging control architecture".

[5] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

[6] 3GPP TS 23.237: "IP Multimedia Subsystem (IMS) Service Continuity; Stage 2".

[7] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2".

[8] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[9] 3GPP TS 23.468: "Group Communication System Enablers for LTE (GCSE_LTE); Stage 2".

[10] 3GPP TS 29.468: "Group Communication System Enablers for LTE (GCSE_LTE); MB2 Reference Point; Stage 3".

[11] Void

[12] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".

[13] IETF RFC 5245 (April 2010): "Interactive Connectivity Establishment (ICE): A Protocol for Network Address Translator (NAT) Traversal for Offer/Answer Protocols".

[14] void

[15] void

[16] 3GPP TS 23.280: "Common functional architecture to support mission critical services".

[17] 3GPP TS 22.280: "Mission Critical Common Requirements (MCCoRe); Stage 1".

[18] 3GPP TS 29.283: "Diameter data management applications".

[19] 3GPP TS 33.180: "Security of the mission critical service".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP 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 3GPP TR 21.905 [1].

Automatic commencement mode: A mode in which the initiation of the private call does not require any action on the part of the receiving MCPTT user.

First-to-answer call: A call that is started when the first MCPTT user among multiple potential target recipients answers. This call requires the answering MCPTT user to answer manually; automatic answer is not allowed

Group call: A mechanism by which an MCPTT user can make a one-to-many MCPTT transmission to other users that are members of MCPTT group(s).

Group home MCPTT system: The MCPTT system where the MCPTT group is defined.

Group host MCPTT server: The MCPTT server within an MCPTT system that provides centralised support for MCPTT services of an MCPTT group defined in a group home MCPTT system.

Manual commencement mode: A mode in which the initiation of the private call requires the receiving MCPTT user to perform some action to accept or reject the call setup.

MCPTT client: An instance of an MC service client that provides the client application function for the MCPTT service.

MCPTT group: An MC service group configured for MCPTT service.

MCPTT group affiliation: An MC service group affiliation for MCPTT.

MCPTT group de-affiliation: An MC service group de-affiliation for MCPTT.

MCPTT ID: An instance of an MC service ID within the MCPTT service.

MCPTT server: An instance of an MC service server that provides the server application function for the MCPTT service.

On-network MCPTT service: The collection of functions and capabilities required to provide MCPTT via EPS bearers using E-UTRAN to provide the last hop radio bearers.

Pre-selected MCPTT user profile: An instance of the pre-selected MC service user profile for MCPTT.

UE-to-network relay MCPTT service: The collection of functions and capabilities required to provide MCPTT via a ProSe UE-to-network relay using ProSe direct communication paths to provide the last hop radio bearer(s).

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.179 [2] apply:

Dispatcher

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