

ETSI TS 136 443 V14.0.0 (2017-04)



**LTE;
Evolved Universal Terrestrial Radio Access
Network (E-UTRAN);
M2 Application Protocol (M2AP)
(3GPP TS 36.443 version 14.0.0 Release 14)**



Reference

RTS/TSGR-0336443ve00

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 only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

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/CommiteeSupportStaff.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.

© European Telecommunications Standards Institute 2017.

All rights reserved.

DECT™, PLUGTESTS™, UMTS™ and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPP™ and LTE™ are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

oneM2M logo is protected for the benefit of its Members

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Intellectual Property Rights

IPRs essential or potentially essential to the present document 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.

Foreword

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, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 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
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	6
1 Scope	7
2 References	7
3 Definitions, symbols and abbreviations	8
3.1 Definitions	8
3.2 Abbreviations	9
4 General	9
4.1 Procedure Specification Principles.....	9
4.2 Forwards and Backwards Compatibility	9
4.3 Specification Notations	9
5 M2AP Services.....	11
5.1 M2AP procedure modules.....	11
5.2 Parallel transactions.....	11
6 Services Expected from Signalling Transport.....	12
7 Functions of M2AP	13
8 M2AP Procedures	14
8.1 List of M2AP Elementary procedures	14
8.2 MBMS Session Start	14
8.2.1 General.....	14
8.2.2 Successful Operation	15
8.2.3 Unsuccessful Operation	16
8.2.4 Abnormal Conditions.....	16
8.3 MBMS Session Stop	16
8.3.1 General.....	16
8.3.2 Successful Operation	16
8.3.3 Abnormal Conditions.....	17
8.4 MBMS Scheduling Information	17
8.4.1 General.....	17
8.4.2 Successful Operation	17
8.4.3 Abnormal Conditions.....	17
8.5 Reset.....	17
8.5.1 General.....	17
8.5.2 Successful Operation	18
8.5.2.1 Reset Procedure Initiated from the MCE	18
8.5.2.2 Reset Procedure Initiated from the eNB.....	19
8.5.3 Abnormal Conditions.....	19
8.5.3.1 Abnormal Condition at the MCE	19
8.5.3.2 Abnormal Condition at the eNB.....	20
8.5.3.3 Crossing of Reset Messages	20
8.6 M2 Setup	20
8.6.1 General.....	20
8.6.2 Successful Operation	20
8.6.3 Unsuccessful Operation	21
8.6.4 Abnormal Conditions.....	21
8.7 eNB Configuration Update.....	21
8.7.1 General.....	21
8.7.2 Successful Operation	22
8.7.3 Unsuccessful Operation	23

8.7.4	Abnormal Conditions.....	23
8.8	MCE Configuration Update	23
8.8.1	General.....	23
8.8.2	Successful Operation	24
8.8.3	Unsuccessful Operation	25
8.8.4	Abnormal Conditions.....	25
8.9	Error Indication	25
8.9.1	General.....	25
8.9.2	Successful Operation	26
8.9.3	Abnormal Conditions.....	26
8.10	MBMS Session Update	26
8.10.1	General.....	26
8.10.2	Successful Operation	27
8.10.3	Unsuccessful Operation	27
8.10.4	Abnormal Conditions.....	27
8.11	MBMS Service Counting	28
8.11.1	General.....	28
8.11.2	Successful Operation	28
8.11.3	Unsuccessful Operation	28
8.11.4	Abnormal Conditions.....	28
8.12	MBMS Service Counting Results Report.....	29
8.12.1	General.....	29
8.12.2	Successful Operation	29
8.12.3	Abnormal Conditions.....	29
8.13	MBMS Overload Notification.....	29
8.13.1	General.....	29
8.13.2	Successful Operation	30
8.13.3	Abnormal Conditions.....	30
9	Elements for M2AP Communication.....	31
9.1	Message Functional Definition and Content	31
9.1.1	General.....	31
9.1.1	Message Contents	31
9.1.1.1	Presence	31
9.1.1.2	Criticality	31
9.1.1.3	Range	31
9.1.1.4	Assigned Criticality.....	31
9.1.2	MBMS SESSION START REQUEST.....	32
9.1.3	MBMS SESSION START RESPONSE.....	32
9.1.4	MBMS SESSION START FAILURE.....	32
9.1.5	MBMS SESSION STOP REQUEST.....	33
9.1.6	MBMS SESSION STOP RESPONSE.....	33
9.1.7	MBMS SCHEDULING INFORMATION.....	33
9.1.8	MBMS SCHEDULING INFORMATION RESPONSE	35
9.1.9	RESET	35
9.1.10	RESET ACKNOWLEDGE	35
9.1.11	M2 SETUP REQUEST.....	36
9.1.12	M2 SETUP RESPONSE.....	36
9.1.13	M2 SETUP FAILURE.....	37
9.1.14	ENB CONFIGURATION UPDATE.....	37
9.1.15	ENB CONFIGURATION UPDATE ACKNOWLEDGE	38
9.1.16	ENB CONFIGURATION UPDATE FAILURE	38
9.1.17	MCE CONFIGURATION UPDATE	39
9.1.18	MCE CONFIGURATION UPDATE ACKNOWLEDGE	39
9.1.19	MCE CONFIGURATION UPDATE FAILURE.....	39
9.1.20	ERROR INDICATION.....	40
9.1.21	MBMS SESSION UPDATE REQUEST.....	40
9.1.22	MBMS SESSION UPDATE RESPONSE.....	40
9.1.23	MBMS SESSION UPDATE FAILURE.....	40
9.1.24	MBMS SERVICE COUNTING REQUEST	41
9.1.25	MBMS SERVICE COUNTING RESPONSE	41
9.1.26	MBMS SERVICE COUNTING FAILURE	41

9.1.27	MBMS SERVICE COUNTING RESULTS REPORT	42
9.1.28	MBMS OVERLOAD NOTIFICATION	42
9.2	Information Element Definitions.....	43
9.2.1	Radio Network Layer Related IEs	43
9.2.1.1	Message Type	43
9.2.1.2	Cause.....	43
9.2.1.3	Void.....	45
9.2.1.4	Void.....	45
9.2.1.5	Void.....	46
9.2.1.6	Void.....	46
9.2.1.7	Criticality Diagnostics.....	46
9.2.1.8	PMCH Configuration.....	46
9.2.1.9	MBMS Session List per PMCH.....	47
9.2.1.10	Global eNB ID	48
9.2.1.11	E-UTRAN CGI	48
9.2.1.12	eNB MBMS Configuration data Item	48
9.2.1.13	MCCH related BCCH Configuration Item.....	49
9.2.1.14	MBSFN Area Id	50
9.2.1.15	Time to Wait	50
9.2.1.16	Global MCE ID	50
9.2.1.17	MBSFN Subframe Configuration	50
9.2.1.18	Common Subframe Allocation Period	51
9.2.1.19	MCCH Update Time	51
9.2.1.20	MBSFN Synchronisation Area Id	51
9.2.1.21	Counting Result.....	51
9.2.1.22	SC-PTM information	51
9.2.1.23	MBMS E-RAB QoS parameters	52
9.2.1.24	GBR QoS Information	52
9.2.1.25	Bit Rate	52
9.2.1.26	Allocation and Retention Priority	53
9.2.2	Transport Network Layer Related IEs	53
9.2.2.1	IP Address.....	53
9.2.2.2	GTP-TEID.....	53
9.2.3	NAS Related IEs.....	54
9.2.3.1	MCE MBMS M2AP ID	54
9.2.3.2	eNB MBMS M2AP ID.....	54
9.2.3.3	TMGI	54
9.2.3.4	MBMS Session Identity	54
9.2.3.5	Void.....	54
9.2.3.6	MBMS Service Area.....	54
9.2.3.7	PLMN Identity	55
9.3	Message and Information Element Abstract Syntax (with ASN.1).....	56
9.3.1	General.....	56
9.3.2	Usage of Private Message Mechanism for Non-standard Use.....	56
9.3.3	Elementary Procedure Definitions.....	56
9.3.4	PDU Definitions	61
9.3.5	Information Element definitions	76
9.3.6	Common definitions	85
9.3.7	Constant definitions	86
9.3.8	Container definitions.....	88
9.4	Message Transfer Syntax	93
9.5	Timers	93
10	Handling of Unknown, Unforeseen and Erroneous Protocol Data	94
Annex A (informative): Change history		95
History		97

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:

Version x.y.z

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.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document specifies the E-UTRAN radio network layer signalling protocol for the M2 interface. The M2 Application Protocol (M2AP) supports the functions of the M2 interface by signalling procedures defined in this document. M2AP is developed in accordance to the general principles stated in TS 36.401 [2] and TS 36.300 [3].

2 References

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

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

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 36.401: "E-UTRAN Architecture Description".
- [3] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".
- [4] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".
- [5] ITU-T Recommendation X.691 (07/2002): "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER) ".
- [6] ITU-T Recommendation X.680 (07/2002): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [7] Void
- [8] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description".
- [9] 3GPP TS 29.061 "Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN)".
- [10] Void
- [11] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRAN); Radio Resource Control (RRC) Protocol Specification".
- [12] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRAN); Physical Channels and Modulation".
- [13] 3GPP TS 36.445: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M1 Data Transport".
- [14] 3GPP TS 29.281: "General Packet Radio Service (GPRS); Tunnelling Protocol User Plane (GTPv1-U)".
- [15] 3GPP TS 23.203: "Policy and charging control architecture".