

ETSI TS 136 413 V16.13.0 (2023-07)



LTE;
Evolved Universal Terrestrial
Radio Access Network (E-UTRAN);
S1 Application Protocol (S1AP)
(3GPP TS 36.413 version 16.13.0 Release 16)

<https://standards.iteh.ai/catalog/standards/sist/6333bea0-0767-4ecb-9775-2176ca02e633/etsi-ts-136-413-v16-13-0-2023-07>



Reference

RTS/TSGR-0336413vgd0

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:
<https://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.

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>

If you find a security vulnerability in the present document, please report it through our
Coordinated Vulnerability Disclosure Program:
<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

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 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 2023.
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 Web server (<https://ipr.etsi.org/>).

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™** 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**.

Legal Notice

(standards.iteh.ai)

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 <https://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.....	15
1 Scope	16
2 References	16
3 Definitions and abbreviations.....	19
3.1 Definitions	19
3.2 Abbreviations	20
4 General	21
4.1 Procedure Specification Principles.....	21
4.2 Forwards and Backwards Compatibility	22
4.3 Specification Notations	22
5 S1AP Services	23
6 Services Expected from Signalling Transport.....	24
7 Functions of S1AP	25
8 S1AP Procedures.....	27
8.1 List of S1AP Elementary procedures	27
8.2 E-RAB Management procedures.....	29
8.2.1 E-RAB Setup	29
8.2.1.1 General	29
8.2.1.2 Successful Operation.....	29
8.2.1.3 Unsuccessful Operation	31
8.2.1.4 Abnormal Conditions	31
8.2.2 E-RAB Modify	31
8.2.2.1 General	31
8.2.2.2 Successful Operation.....	31
8.2.2.3 Unsuccessful Operation	32
8.2.2.4 Abnormal Conditions	33
8.2.3 E-RAB Release	33
8.2.3.1 General	33
8.2.3.2 Successful Operation.....	33
8.2.3.2.1 E-RAB Release – MME initiated	33
8.2.3.2.2 E-RAB Release Indication – eNB initiated	34
8.2.3.3 Abnormal Conditions	35
8.2.4 E-RAB Modification Indication	35
8.2.4.1 General	35
8.2.4.2 Successful Operation.....	35
8.2.4.3 Unsuccessful Operation	36
8.2.4.4 Abnormal Conditions	36
8.3 Context Management procedures	36
8.3.1 Initial Context Setup	36
8.3.1.1 General	36
8.3.1.2 Successful Operation.....	37
8.3.1.3 Unsuccessful Operation	41
8.3.1.4 Abnormal Conditions	41
8.3.2 UE Context Release Request (eNB initiated)	42
8.3.2.1 General	42
8.3.2.2 Successful Operation.....	42
8.3.3 UE Context Release (MME initiated)	43
8.3.3.1 General	43

8.3.3.2	Successful Operation.....	43
8.3.3.3	Abnormal Conditions	44
8.3.4	UE Context Modification.....	44
8.3.4.1	General	44
8.3.4.2	Successful Operation.....	44
8.3.4.3	Unsuccessful Operation	47
8.3.4.4	Abnormal Conditions	47
8.3.5	UE Radio Capability Match.....	47
8.3.5.1	General	47
8.3.5.2	Successful Operation.....	47
8.3.5.3	Unsuccessful Operation	48
8.3.5.4	Abnormal Conditions	48
8.3.6	UE Context Modification Indication	48
8.3.6.1	General	48
8.3.6.2	Successful Operation.....	48
8.3.6.3	Unsuccessful Operation	48
8.3.6.4	Abnormal Conditions	49
8.3.7	UE Context Suspend.....	49
8.3.7.1	General	49
8.3.7.2	Successful Operation.....	49
8.3.8	UE Context Resume.....	49
8.3.8.1	General	49
8.3.8.2	Successful Operation.....	50
8.3.8.3	Unsuccessful Operation	50
8.3.9	Connection Establishment Indication	51
8.3.9.1	General	51
8.3.9.2	Successful Operation.....	51
8.3.9.3	Unsuccessful Operation	52
8.3.9.4	Abnormal Conditions	52
8.3.10	Retrieve UE Information.....	52
8.3.10.1	General	52
8.3.10.2	Successful Operation.....	52
8.3.10.3	Unsuccessful Operation	52
8.3.10.4	Abnormal Conditions	52
8.3.11	UE Information Transfer.....	52
8.3.11.1	General	52
8.3.11.2	Successful Operation.....	52
8.3.11.3	Unsuccessful Operation	53
8.3.11.4	Abnormal Conditions	53
8.3.12	eNB CP Relocation Indication.....	53
8.3.12.1	General	53
8.3.12.2	Successful Operation.....	54
8.3.12.3	Unsuccessful Operation	54
8.3.12.4	Abnormal Conditions	54
8.3.13	MME CP Relocation Indication.....	54
8.3.13.1	General	54
8.3.13.2	Successful Operation.....	54
8.3.13.3	Unsuccessful Operation	55
8.3.13.4	Abnormal Conditions	55
8.4	Handover Signalling.....	55
8.4.1	Handover Preparation	55
8.4.1.1	General	55
8.4.1.2	Successful Operation.....	55
8.4.1.3	Unsuccessful Operation	59
8.4.1.4	Abnormal Conditions	59
8.4.2	Handover Resource Allocation	59
8.4.2.1	General	59
8.4.2.2	Successful Operation.....	60
8.4.2.3	Unsuccessful Operation	64
8.4.2.4	Abnormal Conditions	65
8.4.3	Handover Notification	65
8.4.3.1	General	65

8.4.3.2	Successful Operation.....	65
8.4.3.3	Abnormal Conditions	66
8.4.4	Path Switch Request	66
8.4.4.1	General.....	66
8.4.4.2	Successful Operation.....	66
8.4.4.3	Unsuccessful Operation	69
8.4.4.4	Abnormal Conditions	69
8.4.5	Handover Cancellation	69
8.4.5.1	General.....	69
8.4.5.2	Successful Operation.....	69
8.4.5.3	Unsuccessful Operation	70
8.4.5.4	Abnormal Conditions	70
8.4.6	eNB Status Transfer.....	70
8.4.6.1	General.....	70
8.4.6.2	Successful Operation.....	70
8.4.6.3	Unsuccessful Operation	71
8.4.6.4	Abnormal Conditions	71
8.4.7	MME Status Transfer.....	71
8.4.7.1	General.....	71
8.4.7.2	Successful Operation.....	71
8.4.7.3	Unsuccessful Operation	72
8.4.7.4	Abnormal Conditions	72
8.4.8	Handover Success	72
8.4.8.1	General.....	72
8.4.8.2	Successful Operation.....	72
8.4.8.3	Abnormal Conditions	72
8.4.9	eNB Early Status Transfer.....	72
8.4.9.1	General.....	72
8.4.9.2	Successful Operation.....	72
8.4.9.3	Unsuccessful Operation	73
8.4.9.4	Abnormal Conditions	73
8.4.10	MME Early Status Transfer.....	73
8.4.10.1	General.....	73
8.4.10.2	Successful Operation.....	73
8.4.10.3	Unsuccessful Operation	73
8.4.10.4	Abnormal Conditions	73
8.5	Paging.....	74
8.5.1	General.....	74
8.5.2	Successful Operation	74
8.5.3	Unsuccessful Operation	75
8.5.4	Abnormal Conditions.....	75
8.6	NAS transport.....	75
8.6.1	General.....	75
8.6.2	Successful Operations	76
8.6.2.1	Initial UE Message.....	76
8.6.2.2	DOWNLINK NAS TRANSPORT.....	77
8.6.2.3	UPLINK NAS TRANSPORT.....	79
8.6.2.4	NAS NON DELIVERY INDICATION.....	79
8.6.2.4a	NAS DELIVERY INDICATION	80
8.6.2.5	Reroute NAS Request	80
8.6.3	Unsuccessful Operation	80
8.6.4	Abnormal Conditions.....	80
8.7	Management procedures.....	81
8.7.1	Reset	81
8.7.1.1	General.....	81
8.7.1.2	Successful Operation.....	81
8.7.1.2.1	Reset Procedure Initiated from the MME.....	81
8.7.1.2.2	Reset Procedure Initiated from the E-UTRAN.....	82
8.7.1.3	Abnormal Conditions	83
8.7.1.3.1	Abnormal Condition at the EPC	83
8.7.1.3.2	Abnormal Condition at the E-UTRAN	83
8.7.1.3.3	Crossing of Reset Messages	83

8.7.2	Error Indication.....	83
8.7.2.1	General	83
8.7.2.2	Successful Operation.....	83
8.7.2.3	Abnormal Conditions	84
8.7.3	S1 Setup	84
8.7.3.1	General	84
8.7.3.2	Successful Operation.....	84
8.7.3.3	Unsuccessful Operation	85
8.7.3.4	Abnormal Conditions	85
8.7.4	eNB Configuration Update	85
8.7.4.1	General	85
8.7.4.2	Successful Operation.....	86
8.7.4.3	Unsuccessful Operation	87
8.7.4.4	Abnormal Conditions	87
8.7.5	MME Configuration Update	87
8.7.5.1	General	87
8.7.5.2	Successful Operation.....	87
8.7.5.3	Unsuccessful Operation	88
8.7.5.4	Abnormal Conditions	88
8.7.6	Overload Start	88
8.7.6.1	General	88
8.7.6.2	Successful Operation.....	89
8.7.6.3	Unsuccessful Operation	90
8.7.7	Overload Stop	90
8.7.7.1	General	90
8.7.7.2	Successful Operation.....	90
8.7.7.3	Unsuccessful Operation	90
8.8	S1 CDMA2000 Tunnelling Procedures.....	90
8.8.1	General.....	90
8.8.2	Successful Operations.....	91
8.8.2.1	Downlink S1 CDMA2000 Tunnelling	91
8.8.2.2	Uplink S1 CDMA2000 Tunnelling	91
8.8.3	Unsuccessful Operation	92
8.8.4	Abnormal Conditions.....	92
8.9	UE Capability Info Indication.....	92
8.9.1	General.....	92
8.9.2	Successful Operation	92
8.9.3	Abnormal Conditions.....	93
8.10	Trace Procedures	93
8.10.1	Trace Start.....	93
8.10.1.1	General	93
8.10.1.2	Successful Operation.....	93
8.10.2	Trace Failure Indication.....	94
8.10.2.1	General	94
8.10.2.2	Successful Operation.....	94
8.10.3	Deactivate Trace	94
8.10.3.1	General	94
8.10.3.2	Successful Operation.....	95
8.10.4	Cell Traffic Trace.....	95
8.10.4.1	General	95
8.10.4.2	Successful Operation.....	95
8.11	Location Reporting Procedures	95
8.11.1	Location Reporting Control	95
8.11.1.1	General	95
8.11.1.2	Successful Operation.....	96
8.11.1.3	Abnormal Conditions	96
8.11.2	Location Report Failure Indication.....	96
8.11.2.1	General	96
8.11.2.2	Successful Operation.....	96
8.11.3	Location Report	97
8.11.3.1	General	97
8.11.3.2	Successful Operation.....	97

8.11.3.3	Abnormal Conditions	97
8.12	Warning Message Transmission Procedures	97
8.12.1	Write-Replace Warning	97
8.12.1.1	General	97
8.12.1.2	Successful Operation	98
8.12.1.3	Abnormal Conditions	99
8.12.2	Kill	99
8.12.2.1	General	99
8.12.2.2	Successful Operation	99
8.12.3	PWS Restart Indication	100
8.12.3.1	General	100
8.12.3.2	Successful Operation	100
8.12.4	PWS Failure Indication	100
8.12.4.1	General	100
8.12.4.2	Successful Operation	100
8.13	eNB Direct Information Transfer	101
8.13.1	General	101
8.13.2	Successful Operation	101
8.13.2.1	eNB Direct Information Transfer	101
8.13.3	Abnormal Conditions	101
8.14	MME Direct Information Transfer	101
8.14.1	General	101
8.14.2	Successful Operation	102
8.14.2.1	MME Direct Information Transfer	102
8.14.3	Abnormal Conditions	102
8.15	eNB Configuration Transfer	102
8.15.1	General	102
8.15.2	Successful Operation	102
8.15.2.1	eNB Configuration Transfer	102
8.15.3	Abnormal Conditions	103
8.16	MME Configuration Transfer	103
8.16.1	General	103
8.16.2	Successful Operation	103
8.16.2.1	MME Configuration Transfer	103
8.16.3	Abnormal Conditions	104
8.17	LPPa transport	104
8.17.1	General	104
8.17.2	Successful Operations	105
8.17.2.1	DOWNLINK UE ASSOCIATED LPPA TRANSPORT	105
8.17.2.2	UPLINK UE ASSOCIATED LPPA TRANSPORT	105
8.17.2.3	DOWNLINK NON UE ASSOCIATED LPPA TRANSPORT	105
8.17.2.4	UPLINK NON UE ASSOCIATED LPPA TRANSPORT	106
8.17.3	Unsuccessful Operation	106
8.17.4	Abnormal Conditions	106
8.18	Secondary RAT Data Usage Report	106
8.18.1	General	106
8.18.2	Successful Operations	106
8.18.2.1	SECONDARY RAT DATA USAGE REPORT	106
8.18.3	Unsuccessful Operation	107
8.18.4	Abnormal Conditions	107
8.19	UE Radio Capability ID Mapping	107
8.19.1	General	107
8.19.2	Successful Operation	107
8.19.3	Unsuccessful Operation	107
8.19.4	Abnormal Conditions	107
9	Elements for S1AP Communication	108
9.1	Message Functional Definition and Content	108
9.1.1	General	108
9.1.2	Message Contents	108
9.1.2.1	Presence	108
9.1.2.2	Criticality	108

9.1.2.3	Range	108
9.1.2.4	Assigned Criticality.....	108
9.1.3	E-RAB Management Messages	108
9.1.3.1	E-RAB SETUP REQUEST.....	108
9.1.3.2	E-RAB SETUP RESPONSE.....	109
9.1.3.3	E-RAB MODIFY REQUEST	110
9.1.3.4	E-RAB MODIFY RESPONSE.....	110
9.1.3.5	E-RAB RELEASE COMMAND	111
9.1.3.6	E-RAB RELEASE RESPONSE	111
9.1.3.7	E-RAB RELEASE INDICATION	112
9.1.3.8	E-RAB MODIFICATION INDICATION	112
9.1.3.9	E-RAB MODIFICATION CONFIRM	113
9.1.4	Context Management Messages	113
9.1.4.1	INITIAL CONTEXT SETUP REQUEST	114
9.1.4.2	Void.....	115
9.1.4.3	INITIAL CONTEXT SETUP RESPONSE	115
9.1.4.4	INITIAL CONTEXT SETUP FAILURE.....	116
9.1.4.5	UE CONTEXT RELEASE REQUEST	116
9.1.4.6	UE CONTEXT RELEASE COMMAND	116
9.1.4.7	UE CONTEXT RELEASE COMPLETE	117
9.1.4.8	UE CONTEXT MODIFICATION REQUEST	117
9.1.4.9	UE CONTEXT MODIFICATION RESPONSE.....	118
9.1.4.10	UE CONTEXT MODIFICATION FAILURE	118
9.1.4.11	UE RADIO CAPABILITY MATCH REQUEST	119
9.1.4.12	UE RADIO CAPABILITY MATCH RESPONSE	119
9.1.4.13	UE CONTEXT MODIFICATION INDICATION	119
9.1.4.14	UE CONTEXT MODIFICATION CONFIRM	119
9.1.4.15	UE CONTEXT SUSPEND REQUEST	120
9.1.4.16	UE CONTEXT SUSPEND RESPONSE	120
9.1.4.17	UE CONTEXT RESUME REQUEST	120
9.1.4.18	UE CONTEXT RESUME RESPONSE	121
9.1.4.19	UE CONTEXT RESUME FAILURE	121
9.1.4.20	CONNECTION ESTABLISHMENT INDICATION	122
9.1.4.21	RETRIEVE UE INFORMATION	122
9.1.4.22	UE INFORMATION TRANSFER	122
9.1.4.23	eNB CP RELOCATION INDICATION.....	122
9.1.4.24	MME CP RELOCATION INDICATION	123
9.1.5	Handover Signalling Messages.....	123
9.1.5.1	HANDOVER REQUIRED	123
9.1.5.2	HANDOVER COMMAND	124
9.1.5.3	HANDOVER PREPARATION FAILURE	124
9.1.5.4	HANDOVER REQUEST	125
9.1.5.5	HANDOVER REQUEST ACKNOWLEDGE.....	126
9.1.5.6	HANDOVER FAILURE	127
9.1.5.7	HANDOVER NOTIFY	127
9.1.5.8	PATH SWITCH REQUEST	128
9.1.5.9	PATH SWITCH REQUEST ACKNOWLEDGE	129
9.1.5.10	PATH SWITCH REQUEST FAILURE	130
9.1.5.11	HANDOVER CANCEL	130
9.1.5.12	HANDOVER CANCEL ACKNOWLEDGE	130
9.1.5.13	eNB STATUS TRANSFER	131
9.1.5.14	MME STATUS TRANSFER.....	131
9.1.5.15	HANDOVER SUCCESS	131
9.1.5.16	eNB EARLY STATUS TRANSFER.....	131
9.1.5.17	MME EARLY STATUS TRANSFER.....	131
9.1.6	PAGING	132
9.1.7	NAS Transport Messages	133
9.1.7.1	INITIAL UE MESSAGE	133
9.1.7.2	DOWNLINK NAS TRANSPORT.....	134
9.1.7.3	UPLINK NAS TRANSPORT	135
9.1.7.4	NAS NON DELIVERY INDICATION	135
9.1.7.4a	NAS DELIVERY INDICATION	135

9.1.7.5	REROUTE NAS REQUEST	136
9.1.8	Management messages	136
9.1.8.1	RESET	136
9.1.8.2	RESET ACKNOWLEDGE	136
9.1.8.3	ERROR INDICATION	137
9.1.8.4	S1 SETUP REQUEST	137
9.1.8.5	S1 SETUP RESPONSE	138
9.1.8.6	S1 SETUP FAILURE	139
9.1.8.7	ENB CONFIGURATION UPDATE	139
9.1.8.8	ENB CONFIGURATION UPDATE ACKNOWLEDGE	141
9.1.8.9	ENB CONFIGURATION UPDATE FAILURE	141
9.1.8.10	MME CONFIGURATION UPDATE	141
9.1.8.11	MME CONFIGURATION UPDATE ACKNOWLEDGE	142
9.1.8.12	MME CONFIGURATION UPDATE FAILURE	142
9.1.8.13	OVERLOAD START	142
9.1.8.14	OVERLOAD STOP	143
9.1.9	S1 CDMA2000 Tunnelling Messages	143
9.1.9.1	DLINK S1 CDMA2000 TUNNELLING	143
9.1.9.2	ULINK S1 CDMA2000 TUNNELLING	143
9.1.10	UE CAPABILITY INFO INDICATION	144
9.1.11	Trace Messages	145
9.1.11.1	TRACE START	145
9.1.11.2	TRACE FAILURE INDICATION	145
9.1.11.3	DEACTIVATE TRACE	145
9.1.12	Location Reporting Messages	145
9.1.12.1	LOCATION REPORTING CONTROL	145
9.1.12.2	LOCATION REPORT FAILURE INDICATION	146
9.1.12.3	LOCATION REPORT	146
9.1.13	Warning Message Transmission Messages	146
9.1.13.1	WRITE-REPLACE WARNING REQUEST	146
9.1.13.2	WRITE-REPLACE WARNING RESPONSE	147
9.1.13.3	KILL REQUEST	147
9.1.13.4	KILL RESPONSE	147
9.1.13.5	PWS RESTART INDICATION	147
9.1.13.6	PWS FAILURE INDICATION	148
9.1.14	eNB DIRECT INFORMATION TRANSFER	148
9.1.15	MME DIRECT INFORMATION TRANSFER	149
9.1.16	eNB CONFIGURATION TRANSFER	149
9.1.17	MME CONFIGURATION TRANSFER	149
9.1.18	CELL TRAFFIC TRACE	149
9.1.19	LPPa Transport Messages	150
9.1.19.1	DLINK UE ASSOCIATED LPPA TRANSPORT	150
9.1.19.2	ULINK UE ASSOCIATED LPPA TRANSPORT	150
9.1.19.3	DLINK NON UE ASSOCIATED LPPA TRANSPORT	150
9.1.19.4	ULINK NON UE ASSOCIATED LPPA TRANSPORT	151
9.1.20	Secondary RAT Report Data Usage Messages	151
9.1.20.1	SECONDARY RAT DATA USAGE REPORT	151
9.1.21	UE Radio Capability ID Mapping Messages	151
9.1.21.1	UE RADIO CAPABILITY ID MAPPING REQUEST	151
9.1.21.2	UE RADIO CAPABILITY ID MAPPING RESPONSE	151
9.2	Information Element Definitions	152
9.2.0	General	152
9.2.1	Radio Network Layer Related IEs	152
9.2.1.1	Message Type	152
9.2.1.2	E-RAB ID	152
9.2.1.3	Cause	153
9.2.1.3a	RRC Establishment Cause	157
9.2.1.4	Trace Activation	157
9.2.1.5	Source ID	158
9.2.1.6	Target ID	158
9.2.1.7	Source eNB to Target eNB Transparent Container	159
9.2.1.8	Target eNB to Source eNB Transparent Container	160

9.2.1.9	Source RNC to Target RNC Transparent Container	161
9.2.1.10	Target RNC to Source RNC Transparent Container	161
9.2.1.11	Source BSS to Target BSS Transparent Container	161
9.2.1.12	Target BSS to Source BSS Transparent Container	161
9.2.1.13	Handover Type.....	162
9.2.1.14	Extended RNC-ID	162
9.2.1.15	E-RAB Level QoS Parameters.....	162
9.2.1.16	Paging DRX	162
9.2.1.17	Paging Cause	163
9.2.1.18	GBR QoS Information	163
9.2.1.19	Bit Rate	164
9.2.1.20	UE Aggregate Maximum Bit Rate	164
9.2.1.21	Criticality Diagnostics.....	164
9.2.1.22	Handover Restriction List	165
9.2.1.23	CDMA2000-PDU	167
9.2.1.24	CDMA2000 RAT Type.....	167
9.2.1.25	CDMA2000 Sector ID	167
9.2.1.26	Security Context.....	168
9.2.1.27	UE Radio Capability	168
9.2.1.28	CDMA2000 HO Status	168
9.2.1.29	CDMA2000 HO Required Indication	169
9.2.1.30	1xRTT MEID	169
9.2.1.31	eNB Status Transfer Transparent Container.....	169
9.2.1.32	COUNT Value	171
9.2.1.33	CDMA2000 1xRTT RAND	171
9.2.1.34	Request Type.....	171
9.2.1.35	CDMA2000 1xRTT SRVCC Info.....	172
9.2.1.36	E-RAB List	172
9.2.1.37	Global eNB ID	172
9.2.1.37a	Global en-gNB ID	173
9.2.1.38	E-UTRAN CGI	173
9.2.1.39	Subscriber Profile ID for RAT/Frequency priority	173
9.2.1.39a	Additional RRM Policy Index.....	173
9.2.1.40	UE Security Capabilities https://catalog.etsi.org/standards/sist/6333bea0-0767-4cc9-9775-026327d412	174
9.2.1.41	Security Key.....	174
9.2.1.42	UE History Information	174
9.2.1.43	Last Visited Cell Information.....	175
9.2.1.43a	Last Visited E-UTRAN Cell Information	175
9.2.1.43b	Last Visited GERAN Cell Information	176
9.2.1.44	Message Identifier	176
9.2.1.45	Serial Number	176
9.2.1.46	Warning Area List	176
9.2.1.47	Emergency Area ID	177
9.2.1.48	Repetition Period.....	177
9.2.1.49	Number of Broadcasts Requested	177
9.2.1.50	Warning Type	177
9.2.1.51	Warning Security Information	177
9.2.1.52	Data Coding Scheme	178
9.2.1.53	Warning Message Contents.....	178
9.2.1.54	Broadcast Completed Area List	178
9.2.1.55	Inter-system Information Transfer Type	179
9.2.1.56	Source To Target Transparent Container	179
9.2.1.57	Target To Source Transparent Container	179
9.2.1.58	SRVCC Operation Possible	180
9.2.1.59	SRVCC HO Indication.....	180
9.2.1.60	Allocation and Retention Priority	180
9.2.1.61	Time to wait	181
9.2.1.62	CSG Id	181
9.2.1.63	CSG Id List	181
9.2.1.64	MS Classmark 2	182
9.2.1.65	MS Classmark 3	182
9.2.1.66	Cell Type.....	182

9.2.1.67	Old BSS to New BSS Information	182
9.2.1.68	Layer 3 Information	182
9.2.1.69	E-UTRAN Round Trip Delay Estimation Info	182
9.2.1.70	Broadcast Cancelled Area List	182
9.2.1.71	Number of Broadcasts	183
9.2.1.72	Concurrent Warning Message Indicator	183
9.2.1.73	CSG Membership Status	184
9.2.1.74	Cell Access Mode	184
9.2.1.75	Extended Repetition Period	184
9.2.1.76	Data Forwarding Not Possible	184
9.2.1.77	PS Service Not Available	184
9.2.1.78	Paging Priority	185
9.2.1.79	Relay Node Indicator	185
9.2.1.80	Correlation ID	185
9.2.1.81	MDT Configuration	185
9.2.1.82	MME Relay Support Indicator	188
9.2.1.83	Management Based MDT Allowed	188
9.2.1.84	GW Context Release Indication	188
9.2.1.85	Voice Support Match Indicator	189
9.2.1.86	M3 Configuration	189
9.2.1.87	M4 Configuration	189
9.2.1.88	M5 Configuration	189
9.2.1.89	MDT PLMN List	190
9.2.1.90	COUNT Value Extended	190
9.2.1.91	Kill-all Warning Messages Indicator	190
9.2.1.92	LHN ID	190
9.2.1.93	User Location Information	190
9.2.1.94	MBSFN-ResultToLog	191
9.2.1.95	EARFCN	191
9.2.1.96	Expected UE Behaviour	191
9.2.1.97	Expected UE Activity Behaviour	191
9.2.1.98	UE Radio Capability for Paging	192
9.2.1.99	ProSe Authorized	192
9.2.1.100	hCOUNT Value for PDCP SN Length 18. dards/sist/6333bea0-0767-4ccb-9775-	193
9.2.1.101	M6 Configuration	193
9.2.1.102	M7 Configuration	193
9.2.1.103	Assistance Data for Paging	193
9.2.1.104	Assistance Data for Recommended Cells	194
9.2.1.105	Information on Recommended Cells and eNBs for Paging	194
9.2.1.106	Recommended Cells for Paging	194
9.2.1.107	Recommended eNBs for Paging	194
9.2.1.108	Assistance Data for CE capable UEs	195
9.2.1.109	Cell Identifier and Coverage Enhancement Level	195
9.2.1.110	Paging Attempt Information	195
9.2.1.111	Paging eDRX Information	195
9.2.1.112	UE Retention Information	196
9.2.1.113	UE User Plane CIoT Support Indicator	196
9.2.1.114	NB-IoT Default Paging DRX	196
9.2.1.115	NB-IoT Paging eDRX Information	196
9.2.1.116	Bearer Type	197
9.2.1.117	RAT Type	197
9.2.1.118	CE-mode-B Support Indicator	197
9.2.1.119	SRVCC Operation Not Possible	197
9.2.1.120	V2X Services Authorized	197
9.2.1.121	Served DCNs Items	197
9.2.1.122	UE Sidelink Aggregate Maximum Bit Rate	198
9.2.1.123	Enhanced Coverage Restricted	198
9.2.1.124	Secondary RAT Usage Report List	198
9.2.1.125	Handover Flag	199
9.2.1.126	Extended Bit Rate	199
9.2.1.127	NR UE Security Capabilities	199
9.2.1.128	UE Application layer measurement configuration	200

9.2.1.129	CE-mode-B Restricted	201
9.2.1.130	Packet Loss Rate	201
9.2.1.131	Global RAN Node ID.....	201
9.2.1.132	Global gNB ID	202
9.2.1.133	Source NG-RAN Node To Target NG-RAN Node Transparent Container	202
9.2.1.134	Target NG-RAN Node To Source NG-RAN Node Transparent Container	202
9.2.1.135	LTE-M Indication	202
9.2.1.136	Aerial UE subscription information	202
9.2.1.137	Bluetooth Measurement Configuration	202
9.2.1.138	WLAN Measurement Configuration.....	203
9.2.1.139	Warning Area Coordinates.....	203
9.2.1.140	Subscription Based UE Differentiation Information	204
9.2.1.141	PSCell Information.....	205
9.2.1.142	NR CGI	205
9.2.1.143	Time Since Secondary Node Release.....	205
9.2.1.144	UE Context Reference at Source.....	205
9.2.1.145	RAN UE NGAP ID.....	205
9.2.1.146	IAB Authorized.....	205
9.2.1.147	Ethernet Type.....	206
9.2.1.148	NR V2X Services Authorized.....	206
9.2.1.149	NR UE Sidelink Aggregate Maximum Bit Rate	206
9.2.1.150	PC5 QoS Parameters	206
9.2.1.151	Inter System Measurement Configuration	207
9.2.1.152	Source Node ID.....	208
9.2.1.153	UE Radio Capability ID	208
9.2.1.154	UE Radio Capability – NR Format	209
9.2.1.155	DAPS Request Information.....	209
9.2.1.156	DAPS Response Information	209
9.2.1.157	eNB Early Status Transfer Transparent Container	209
9.2.1.158	WUS Assistance Information.....	210
9.2.1.159	NB-IoT Paging DRX.....	210
9.2.1.160	UE Radio Capability for Paging – NR Format.....	210
9.2.2	Transport Network Layer Related IEs	211
9.2.2.1	Transport Layer Address	211
9.2.2.2	GTP-TEID.....	211
9.2.2.3	Tunnel Information	211
9.2.2.4	URI.....	211
9.2.3	NAS Related IEs	212
9.2.3.1	LAI.....	212
9.2.3.2	RAC	212
9.2.3.3	MME UE S1AP ID	212
9.2.3.4	eNB UE S1AP ID	212
9.2.3.5	NAS-PDU	212
9.2.3.6	S-TMSI	212
9.2.3.7	TAC.....	213
9.2.3.8	PLMN Identity	213
9.2.3.9	GUMMEI.....	213
9.2.3.10	UE Identity Index value	213
9.2.3.11	IMSI	213
9.2.3.12	MMEC	214
9.2.3.13	UE Paging Identity	214
9.2.3.14	DL Forwarding.....	214
9.2.3.15	Direct Forwarding Path Availability	215
9.2.3.16	TAI.....	215
9.2.3.17	Relative MME Capacity.....	215
9.2.3.18	UE S1AP ID pair.....	215
9.2.3.19	Overload Response.....	215
9.2.3.20	Overload Action.....	215
9.2.3.21	CS Fallback Indicator.....	216
9.2.3.22	CN Domain	216
9.2.3.23	RIM Transfer.....	216
9.2.3.24	RIM Information	217

9.2.3.25	RIM Routing Address	217
9.2.3.26	SON Configuration Transfer	217
9.2.3.26a	EN-DC SON Configuration Transfer	218
9.2.3.27	SON Information	219
9.2.3.28	SON Information Reply	219
9.2.3.29	X2 TNL Configuration Info	220
9.2.3.30	NAS Security Parameters from E-UTRAN	220
9.2.3.31	NAS Security Parameters to E-UTRAN	221
9.2.3.32	LPPa-PDU	221
9.2.3.33	Routing ID	221
9.2.3.34	Time Synchronisation Info	221
9.2.3.35	Void	221
9.2.3.36	Traffic Load Reduction Indication	221
9.2.3.37	Additional CS Fallback Indicator	222
9.2.3.38	Masked IMEISV	222
9.2.3.39	SON Information Report	222
9.2.3.40	RLF Report Information	222
9.2.3.41	Muting Pattern Information	223
9.2.3.42	Synchronisation Information	223
9.2.3.43	Listening Subframe Pattern	223
9.2.3.44	MME Group ID	224
9.2.3.45	Additional GUTI	224
9.2.3.46	Extended UE Identity Index Value	224
9.2.3.47	NB-IoT UE Identity Index Value	224
9.2.3.48	DL NAS PDU Delivey Request	224
9.2.3.49	DL CP Security Information	225
9.2.3.50	UL CP Security Information	225
9.2.3.51	UE Capability Info Request	225
9.2.3.52	5GS TAI	225
9.2.3.53	5GS TAC	225
9.2.3.54	End Indication	226
9.2.3.55	Pending Data Indication	226
9.3	Message and Information Element Abstract Syntax (with ASN.1)	227
9.3.0	General	227
9.3.1	Usage of private message mechanism for non-standard use	227
9.3.2	Elementary Procedure Definitions	228
9.3.3	PDU Definitions	243
9.3.4	Information Element Definitions	305
9.3.5	Common Definitions	364
9.3.6	Constant Definitions	364
9.3.7	Container Definitions	373
9.4	Message Transfer Syntax	378
9.5	Timers	378
10	Handling of Unknown, Unforeseen and Erroneous Protocol Data	379
10.1	General	379
10.2	Transfer Syntax Error	379
10.3	Abstract Syntax Error	379
10.3.1	General	379
10.3.2	Criticality Information	380
10.3.3	Presence Information	380
10.3.4	Not comprehended IE/IE group	381
10.3.4.1	Procedure Code	381
10.3.4.1A	Type of Message	381
10.3.4.2	IEs other than the Procedure Code and Type of Message	381
10.3.5	Missing IE or IE group	382
10.3.6	IEs or IE groups received in wrong order or with too many occurrences or erroneously present	383
10.4	Logical Error	384
10.5	Exceptions	384
10.6	Handling of AP ID	385
Annex A (informative):	S1AP Transparent containers content	386

Annex B (normative):	IEs for SON Transfer	387
B.1	Tabular definition.....	387
B.1.1	SON Transfer Application Identity	387
B.1.2	SON Transfer Request Container.....	387
B.1.3	SON Transfer Response Container	388
B.1.4	SON Transfer Cause.....	389
B.1.5	Cell Load Reporting Response.....	391
B.1.6	E-UTRAN Cell Load Reporting Response	392
B.1.7	Multi-Cell Load Reporting Request	392
B.1.8	IRAT Cell ID.....	392
B.1.9	Multi-Cell Load Reporting Response.....	393
B.1.10	Cell Load Reporting Cause	393
B.1.11	Event-Triggered Cell Load Reporting Request	394
B.1.12	Event-triggered Cell Load Reporting Response	394
B.1.13	HO Report	395
B.1.14	Cell Activation Request.....	395
B.1.15	Cell Activation Response	396
B.1.16	Cell State Indication	396
B.1.17	Failure Event Report	396
B.1.18	eHRPD Sector ID	397
B.1.19	eHRPD Sector Load Reporting Response	397
B.1.20	eHRPD Composite Available Capacity.....	397
B.1.21	eHRPD Sector Capacity Class Value	398
B.1.22	eHRPD Capacity Value.....	398
B.1.23	Candidate PCI	398
B.2	ASN.1 definition	398
Annex C (informative):	Processing of Transparent Containers at the MME.....	404
Annex D (informative):	Change history	405
History	ETSI TS 136 413 V16.13.0 (2023-07).....	413

<https://standards.iteh.ai/catalog/standards/sist/6333bea0-0767-4ecb-9775-2176ca02e633/etsi-ts-136-413-v16-13-0-2023-07>