

ETSI TS 101 376-4-13 V3.4.1 (2015-10)



**GEO-Mobile Radio Interface Specifications (Release 3);
Third Generation Satellite Packet Radio Service;
Part 4: Radio interface protocol specifications;
Sub-part 13: Radio Resource Control (RRC) protocol;
lu Mode;
GMR-1 3G 44.118**

ETSI PREVIEW
https://standards.etsi.org/standards-search/50c08773-10ad-4c8a-9073-f5116a256001/101376-4-13-3.4.1

Reference

RTS/SES-00374-4-13

Keywords3G, GMPRS, GMR, GPRS, GSM, GSO, MES,
mobile, MSS, radio, satellite, S-PCN**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

<http://portal.etsi.org/tb/status/status.asp>

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 2015.

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

Contents

Intellectual Property Rights	15
Foreword.....	15
Modal verbs terminology.....	16
Introduction	16
1 Scope	18
1.1 General	18
1.2 Scope of the present document.....	18
1.3 Application to the interface structures.....	18
1.4 Structure of layer 3 procedures.....	18
2 References	18
2.1 Normative references	18
2.2 Informative references.....	21
3 Definitions, symbols and abbreviations	21
3.1 Definitions	21
3.2 Abbreviations	22
3.3 Random values	23
3.4 Specification Notations	23
4 RRC Functions and Services provided to upper layers	23
4.1 RRC Functions	23
4.2 RRC Services provided to upper layers.....	24
5 Services expected from lower layers.....	24
5.1 Services required from layer 2 and physical layers.....	24
5.2 Signalling Radio Bearers.....	24
6 RRC Protocol modes and states	25
6.1 General	25
6.2 Relation between Iu mode and A/Gb mode.....	25
6.2.1 Handover between Iu and A/Gb modes.....	25
6.2.2 Cell reselection between Iu and A/Gb mode	25
6.2a Relation between GERAN Iu mode RRC and UTRA RRC.....	25
6.2a.1 Handover between GERAN Iu mode and UTRAN	25
6.2a.2 Cell reselection between GERAN Iu mode and UTRAN	25
6.3 RR modes of operation.....	26
6.4 RRC modes and states.....	26
6.4.1 RRC-Idle Mode	26
6.4.1.1 General	26
6.4.1.2 Transition from RRC-Idle Mode to RRC-Connected mode.....	26
6.4.2 RRC-Connected mode: RRC-Cell_Shared state.....	26
6.4.2.1 General	26
6.4.2.2 Transition from RRC-Cell_Shared state to RRC-Idle Mode.....	27
6.4.2.3 Transition from RRC-Cell_Shared state to RRC-Cell_Dedicated state	27
6.4.2.4 Transition from RRC-Cell_Shared state to RRC-GRA_PCH state.....	27
6.4.2.5 Radio resource allocation tasks	27
6.4.2.6 RRC connection mobility tasks.....	27
6.4.2.7 MES measurements.....	27
6.4.3 RRC-Connected mode: RRC-Cell_Dedicated state.....	28
6.4.3.1 General	28
6.4.3.2 Transition from RRC-Cell_Dedicated state to RRC-Cell_Shared state	28
6.4.3.3 Transition from RRC-Cell_Dedicated state to RRC-Idle Mode.....	28
6.4.3.4 Transition from RRC-Cell_Dedicated state to RRC-GRA_PCH state.....	28
6.4.3.5 Radio resource allocation tasks	28
6.4.3.6 RRC connection mobility tasks.....	28
6.4.3.7 MES measurements.....	28
6.4.4 RRC-Connected mode: RRC-GRA_PCH state	28

6.4.4.1	General	28
6.4.4.2	Transition from RRC-GRA_PCH state to RRC-Cell_Shared state.....	29
6.4.4.3	Transition from RRC-GRA_PCH state to RRC-Cell_Dedicated state.....	29
6.4.4.4	Radio resource allocation tasks	29
6.4.4.5	RRC connection mobility tasks.....	29
6.4.4.6	MES measurements.....	30
6.4.4.7	Transfer and update of system information.....	30
7	Radio Resource Control procedures.....	30
7.1	General	30
7.2	Change of channels in case of handover	30
7.2.1	Change of channel serving SRB1	30
7.2.2	Change of channel serving SRB2	30
7.2.3	Change of channel serving SRB3	30
7.2.4	Change of channel serving SRB4	30
7.3	System information broadcasting	31
7.3.1	General.....	31
7.3.2	Broadcast of Iu mode specific System Information	31
7.4	Paging procedure.....	31
7.4.1	General.....	31
7.4.2	Paging initiation in RRC-Idle mode, or RRC-GRA_PCH state.....	31
7.4.2.1	General	31
7.4.2.2	Initiation.....	31
7.4.2.3	Reception of a PAGING INDICATION service primitive	32
7.4.3	Paging initiation in RRC-Cell_Dedicated state.....	33
7.4.4	Abnormal cases.....	33
7.5	RRC Connection management procedures.....	34
7.5.1	RRC connection establishment.....	34
7.5.1.0	Signalling flow	34
7.5.1.1	General.....	34
7.5.1.2	Initiation.....	34
7.5.1.3	RRC CONNECTION REQUEST message contents to set.....	35
7.5.1.4	Reception of an RRC CONNECTION REQUEST message by the GERAN	35
7.5.1.5	T300 timeout	35
7.5.1.6	Abortion of RRC connection establishment.....	36
7.5.1.7	Reception of an RRC CONNECTION SETUP message by the MES	36
7.5.1.8	Cell re-selection	37
7.5.1.9	Invalid RRC CONNECTION SETUP message.....	38
7.5.1.10	Reception of an RRC CONNECTION REJECT message by the MES	38
7.5.1.11	Invalid RRC CONNECTION REJECT message.....	38
7.5.2	RRC connection release.....	39
7.5.2.0	Signalling flow	39
7.5.2.1	General	40
7.5.2.2	Initiation.....	40
7.5.2.3	Reception of an RRC CONNECTION RELEASE message by the MES.....	40
7.5.2.4	Invalid RRC CONNECTION RELEASE message.....	41
7.5.2.5	Cell re-selection or radio link failure	41
7.5.2.6	Reception of an RRC CONNECTION RELEASE COMPLETE message by GERAN	41
7.5.2.7	Unsuccessful transmission of the RRC CONNECTION RELEASE COMPLETE message, acknowledged mode transmission.....	42
7.5.2.8	Detection of loss of dedicated physical channel by GERAN in RRC-Cell_Dedicated state.....	42
7.5.2.9	Failure to receive RRC CONNECTION RELEASE COMPLETE message by GERAN.....	42
7.6	Transmission of MES capability information.....	42
7.6.1	General.....	42
7.6.2	Initiation.....	42
7.6.3	Reception of an MES CAPABILITY INFORMATION message by the GERAN.....	43
7.6.4	Reception of the MES CAPABILITY INFORMATION CONFIRM message by the MES	44
7.6.5	Invalid MES CAPABILITY INFORMATION CONFIRM message.....	44
7.6.6	T304 timeout.....	44
7.7	MES capability enquiry.....	45
7.7.1	General.....	45
7.7.2	Initiation.....	45

7.7.3	Reception of an MES CAPABILITY ENQUIRY message by the MES	45
7.7.4	Invalid MES CAPABILITY ENQUIRY message	45
7.8	RRC Connection mobility procedures	46
7.8.1	Cell Update procedures	46
7.8.1.0	Signalling flows	46
7.8.1.1	General	47
7.8.1.2	Initiation	48
7.8.1.3	CELL UPDATE message contents to set	50
7.8.1.4	Reception of an CELL UPDATE message by the GERAN	51
7.8.1.5	Reception of the CELL UPDATE CONFIRM message by the MES	52
7.8.1.6	Transmission of a response message to GERAN	54
7.8.1.7	Physical channel failure	56
7.8.1.8	Unsupported configuration by the MES	58
7.8.1.9	Invalid configuration	59
7.8.1.10	Incompatible simultaneous reconfiguration	60
7.8.1.10a	Security reconfiguration during Cell update procedure	62
7.8.1.11	Void	62
7.8.1.12	Invalid CELL UPDATE CONFIRM message	62
7.8.1.13	T302 expiry or cell reselection	63
7.8.1.14	T314 expiry	65
7.8.1.15	T315 expiry	66
7.8.1.16	Reception of the GERAN MOBILITY INFORMATION CONFIRM message by the GERAN	66
7.8.1.17	Inter-RAT cell reselection to GERAN <i>Iu mode</i>	67
7.8.1.17.1	General	67
7.8.1.17.2	Initiation	67
7.8.1.17.3	MES fails to complete an inter-RAT cell reselection	67
7.8.1.18	Inter-RAT cell reselection from GERAN <i>Iu mode</i>	67
7.8.1.18.1	General	67
7.8.1.18.2	Initiation	67
7.8.1.18.3	Successful cell reselection	68
7.8.1.18.4	MES fails to complete an inter-RAT cell reselection	68
7.8.2	GRA update procedure	68
7.8.2.0	Signalling flow	68
7.8.2.1	General	69
7.8.2.2	Initiation	69
7.8.2.3	GRA UPDATE message contents to set	70
7.8.2.4	Reception of an GRA UPDATE message by the GERAN	70
7.8.2.5	Reception of the GRA UPDATE CONFIRM message by the MES	71
7.8.2.6	Transmission of a response message to GERAN	72
7.8.2.7	Invalid configuration	72
7.8.2.8	Incompatible simultaneous reconfiguration	73
7.8.2.9	Confirmation error of GRA ID list	74
7.8.2.10	Invalid CELL GRA UPDATE CONFIRM message	75
7.8.2.11	T302 expiry or cell reselection	76
7.8.3	GERAN mobility information	77
7.8.3.0	Signalling flow	77
7.8.3.1	General	78
7.8.3.2	Initiation	78
7.8.3.3	Reception of GERAN MOBILITY INFORMATION message by the MES	78
7.8.3.4	Reception of an GERAN MOBILITY INFORMATION CONFIRM message by the GERAN	81
7.8.3.5	Cell re-selection	81
7.8.3.6	Incompatible simultaneous security reconfiguration	81
7.8.3.7	Invalid GERAN MOBILITY INFORMATION message	82
7.8.4	Inter-mode handover from GERAN <i>Iu mode</i>	82
7.9	Procedures for System Information transmission and Measurement reporting in RRC-Cell_Dedicated state	82
7.9.0	Relation to ETSI TS 101 376-4-8	82
7.9.1	General	82
7.9.2	Measurement Report and Enhanced Measurement Report	82
7.9.2.1	Void	82
7.9.2.2	Parameters for Measurements and Reporting	82
7.9.2.2.1	General	82

7.9.2.2.2	Deriving the 3G Neighbour Cell list from the 3G Neighbour Cell Description	83
7.9.2.2.3	Deriving the GSM Neighbour Cell list from the BSICs and the BCCH Allocation	83
7.9.2.2.4	Deriving the Neighbour Cell list from the GSM Neighbour Cell list and the 3G Neighbour Cell list	83
7.9.2.2.5	Real Time Differences	83
7.9.2.2.6	Report Priority Description	83
7.9.2.2.7	The 3G Cell Reselection list	83
7.9.2.2.8	CCN Support description	83
7.9.3	Extended measurement report	83
7.10	Void	83
7.11	Void	83
7.12	Mapping of user data substreams onto timeslots in a multislot configuration	83
7.13	Application Procedures	84
7.13.1	LCS transfer	84
7.13.1.0	Signalling flow	84
7.13.1.1	General	84
7.13.1.2	Initiation of LCS transfer procedure in the GERAN	84
7.13.1.3	Reception of LCS DOWNLINK INFORMATION message by the MES	84
7.13.1.4	Transmission of a response message by the MES	85
7.13.1.5	Reception of a response message by the GERAN	85
7.13.1.6	Invalid LCS DOWNLINK INFORMATION message	85
7.13.2	Position Reporting	86
7.13.2.0	Signalling flow	86
7.13.2.1	General	86
7.13.2.2	Initiation of position reporting procedure in the GERAN	86
7.13.2.3	Reception of POSITION REPORT REQUEST message by the MES	86
7.13.2.4	Transmission of a response message by the MES	86
7.13.2.5	Reception of a response message by the GERAN	86
7.13.2.6	Invalid POSITION REPORT REQUEST message	86
7.13.2a	Autonomous Position Update	87
7.13.2a.0	Signalling flow	87
7.13.2a.1	General	87
7.13.2a.2	Enabling and Disabling of Autonomous Position Update	87
7.13.2a.3	Transmission of POSITION UPDATE INDICATION message by the MES	88
7.13.2a.4	Reception of POSITION UPDATE INDICATION message by the GERAN	88
7.13.3	RAB Upper Layer Reconfiguration	88
7.13.3.0	Signalling flow	88
7.13.3.1	General	88
7.13.3.2	Initiation of RAB Upper Layer Reconfiguration procedure in the GERAN	88
7.13.3.3	Reception of RAB Upper Layer Reconfiguration message by the MES	88
7.13.3.4	Transmission of a response message by the MES	89
7.13.3.5	Reception of a response message by the GERAN	89
7.13.4	RAB Binding	89
7.13.4.0	Signalling flow	89
7.13.4.1	General	89
7.13.4.2	Initiation of RAB Binding procedure in the MES	89
7.13.4.2.0	General	89
7.13.4.2.1	Adding a RAB Binding	89
7.13.4.2.2	Updating a RAB Binding	89
7.13.4.2.3	Removing a RAB Binding	90
7.13.4.3	Reception of RAB Binding Request message by the GERAN	90
7.13.4.4	Transmission of a response message by the GERAN	90
7.13.4.5	Reception of a response message by the MES	90
7.14	Radio Bearer control procedures	90
7.14.1	Reconfiguration procedures	90
7.14.1.0	Signalling flow	90
7.14.1.1	General	92
7.14.1.2	Initiation	93
7.14.1.3	Reception of RADIO BEARER SETUP or RADIO BEARER RECONFIGURATION or RADIO BEARER RELEASE message by the MES	95
7.14.1.4	Transmission of a response message by the MES, normal case	103
7.14.1.5	Reception of a response message by the GERAN, normal case	106

7.14.1.6	Unsupported configuration in the MES.....	107
7.14.1.7	Physical channel failure	107
7.14.1.8	Cell re-selection	108
7.14.1.9	Transmission of a response message by the MES, failure case.....	108
7.14.1.10	Reception of a response message by the GERAN, failure case	109
7.14.1.11	Invalid configuration.....	109
7.14.1.12	Incompatible simultaneous reconfiguration	110
7.14.1.12.0	General	110
7.14.1.12.1	Incompatible simultaneous security reconfiguration.....	110
7.14.1.12.2	Cell Update procedure during security reconfiguration.....	110
7.14.1.13	Invalid received message	111
7.14.1.14	Abnormal cases	111
7.14.2	MES initiated DTM procedures while in RRC-Cell_Dedicated-MAC-Dedicated state	113
7.14.2.1	General	113
7.14.2.2	Initiation of the DTM Request procedure by the MES	113
7.14.2.3	Reception of a GERAN Iu mode DTM REQUEST message by the GERAN	114
7.14.2.3.1	General	114
7.14.2.3.2	PDCH assignment	114
7.14.2.3.3	DTM Request rejection	114
7.14.2.3.4	Reception of a GERAN Iu mode DTM REJECT message by the MES, normal case.....	114
7.14.2.3.5	Invalid GERAN Iu mode DTM REJECT message.....	115
7.14.2.4	Abnormal cases	115
7.14.2.5	T3148 expiry	115
7.15	Signalling flow procedures.....	116
7.15.1	Signalling connection release procedure.....	116
7.15.1.1	General	116
7.15.1.2	Initiation of SIGNALLING CONNECTION RELEASE by the GERAN.....	116
7.15.1.3	Reception of SIGNALLING CONNECTION RELEASE by the MES	116
7.15.1.4	Invalid SIGNALLING CONNECTION RELEASE message.....	116
7.15.1.5	Invalid configuration.....	117
7.15.2	Signalling connection release indication procedure.....	117
7.15.2.1	General	117
7.15.2.2	Initiation.....	117
7.15.2.2a	RLC re-establishment, inter-mode handover or inter-RAT change	118
7.15.2.3	Reception of SIGNALLING CONNECTION RELEASE INDICATION by the GERAN	118
7.16	Security mode control	119
7.16.1	Security mode control	119
7.16.1.0	Signalling flow	119
7.16.1.1	General	119
7.16.1.2	Initiation.....	119
7.16.1.2.1	Ciphering configuration change	119
7.16.1.2.2	Integrity protection configuration change.....	121
7.16.1.2.3	Reception of SECURITY MODE COMMAND message by the MES.....	123
7.16.1.2.4	Incompatible simultaneous security reconfiguration.....	130
7.16.1.2.5	Cell Update procedure during security reconfiguration.....	130
7.16.1.2.6	Invalid configuration	131
7.16.1.2.7	Reception of SECURITY MODE COMPLETE message by the GERAN.....	132
7.16.1.2.8	Invalid SECURITY MODE COMMAND message	133
7.17	Delivery of Non-Access stratum messages	134
7.17.1	Initial Direct transfer.....	134
7.17.1.0	Signalling flow	134
7.17.1.1	General	134
7.17.1.2	Initiation of Initial direct transfer procedure in the MES	134
7.17.1.3	RLC re-establishment, inter-mode handover or inter-RAT change	135
7.17.1.4	Abortion of signalling connection establishment	136
7.17.1.5	Reception of INITIAL DIRECT TRANSFER message by the GERAN	136
7.17.2	Downlink Direct transfer	136
7.17.2.0	Signalling flow	136
7.17.2.1	General	136
7.17.2.2	Initiation of downlink direct transfer procedure in the GERAN	137
7.17.2.3	Reception of a DOWNLINK DIRECT TRANSFER message by the MES.....	137
7.17.2.4	No signalling connection exists.....	137

7.17.2.5	Invalid DOWNLINK DIRECT TRANSFER message	137
7.17.3	Uplink Direct transfer	138
7.17.3.0	Signalling flow	138
7.17.3.1	General	138
7.17.3.2	Initiation of uplink direct transfer procedure in the MES	138
7.17.3.3	RLC re-establishment, inter-mode handover or inter-RAT change	139
7.17.3.4	Reception of UPLINK DIRECT TRANSFER message by the GERAN	139
7.18	General procedures	139
7.18.1	Selection of initial MES identity	139
7.18.2	Actions when entering RRC-Idle mode from RRC-Connected mode	139
7.18.2a	Void	140
7.18.3	Maintenance of Hyper Frame Numbers	141
7.18.4	START value calculation	141
7.18.5	Integrity protection	142
7.18.5.0	General	142
7.18.5.1	Integrity protection in downlink	143
7.18.5.2	Integrity protection in uplink	143
7.18.5.3	Calculation of message authentication code	145
7.18.6	Physical channel establishment	145
7.18.6.0	General	145
7.18.6.1	Finely synchronized cell case	146
7.18.6.2	Non synchronized cell case	146
7.18.6.3	Pseudo-synchronized cell case	147
7.18.6.4	Pre-synchronized cell case	147
7.18.7	Void	148
7.18.8	Link failure and Radio link failure criteria and actions upon link or radio link failure	148
7.18.9	Unsupported configuration	148
7.18.10	Invalid RLC/MAC control message notification	148
7.18.11	Actions related to Radio Bearer mapping	148
7.18.12	Network response times for DCH allocation	149
7.19	Generic actions on receipt and absence of an information element	149
7.19.1	CN information info	149
7.19.2	Signalling connection release indication	150
7.19.2a	MES Timers and Constants in Connected Mode	150
7.19.3	GERAN mobility information elements	150
7.19.3.1	GRA identity	150
7.19.3.2	Mapping info	151
7.19.4	MES information elements	151
7.19.4.1	Downlink Activation time	151
7.19.4.2	DRX parameters	152
7.19.4.2.1	Void	152
7.19.4.2.2	GERAN DRX cycle length coefficient	152
7.19.4.2.3	Paging Group	152
7.19.4.3	Generic state transition rules depending on received information elements	152
7.19.4.4	Ciphering mode info	153
7.19.4.5	Integrity protection mode info	156
7.19.4.5.1	General	156
7.19.4.5.2	Initialization of Integrity Protection	157
7.19.4.5.3	Integrity Protection Re-configuration for SBSS Relocation	157
7.19.4.5.4	Integrity Protection modification in case of new keys or initialization of signalling connection	158
7.19.4.6	Integrity check info	159
7.19.4.7	New G-RNTI	159
7.19.4.8	RRC Transaction Identifier	159
7.19.4.9	Capability Update Requirement	162
7.19.4.10	Position Update Timers	163
7.19.4.11	START _n	163
7.19.4.12	Ciphering Key	163
7.19.5	Radio bearer information elements	164
7.19.5.1	Signalling RB information to setup list	164
7.19.5.2	RAB Information for Setup	164
7.19.5.3	RAB Information to Reconfigure	164
7.19.5.4	RB information to setup	165

7.19.5.5	RB information to be affected	166
7.19.5.6	RB information to reconfigure	166
7.19.5.7	RB Information to Release	167
7.19.5.8	RB with PDCP Information	167
7.19.5.9	Void	167
7.19.5.9a	RB Mapping Info	167
7.19.5.10	RLC Info	167
7.19.5.11	PDCP Info	167
7.19.5.11a	PDCP context relocation info	170
7.19.5.12	PDCP SN Info	170
7.19.5.13	NAS Synchronization Indicator	170
7.19.5.14	Physical Channel Configuration	170
7.19.5.15	RLC Sequence Number	170
7.19.6	Physical channel parameters	171
7.19.6.1	DCH Description	171
7.19.6.2	PDCH parameters	171
7.19.7	Transport channel information elements	172
7.20	Key Exchange Procedure	172
7.20.1	General	172
8	Handling of unknown, unforeseen, and erroneous protocol data	173
8.1	General	173
8.2	CSN.1 violation or encoding error	173
8.3	Unknown or unforeseen message type	173
8.4	Unsolicited received message	174
8.5	Unexpected critical message extension	174
8.6	Message with error label: "Content part error"	174
8.7	Unknown or unforeseen information element value, mandatory information element	175
8.8	Unexpected non-critical message extension	175
8.9	Message with error label: "Message escape"	175
8.10	Handling of errors in nested information elements	176
8.11	Void	177
9	Message functional definitions and contents	177
9.1	General	177
9.1.1	Introduction	177
9.1.2	Repetitions of Structure, IE or field	178
9.1.3	Message format and error labels	178
9.1.3.1	General	178
9.1.3.2	Message extension for new protocol version in RRC	179
9.1.3.2.0	General	179
9.1.3.2.1	Non-Critical extension	179
9.1.3.2.2	Critical extension	179
9.1.3.2.3	Extension of IEs	180
9.1.3.2.4	"Message escape" error label	181
9.2	Messages for Radio Resources management	181
9.2.1	General	181
9.2.1.0	Message definitions overview	181
9.2.1.1	References	181
9.2.1.2	Downlink RRC messages	183
9.2.1.3	Uplink RRC messages	184
9.2.1.3.0	General	184
9.2.1.3.1	Message definitions	184
9.2.2	CELL UPDATE	184
9.2.3	CELL UPDATE CONFIRM	184
9.2.4	DEDICATED PAGING REQUEST	187
9.2.5	DOWNLINK DIRECT TRANSFER	187
9.2.6	EXTENDED MEASUREMENT ORDER	188
9.2.7	EXTENDED MEASUREMENT REPORT	188
9.2.7a	ENHANCED MEASUREMENT REPORT	188
9.2.8	GERAN MOBILITY INFORMATION	188
9.2.9	GERAN MOBILITY INFORMATION CONFIRM	189

9.2.10	GERAN MOBILITY INFORMATION FAILURE.....	190
9.2.11	GRA UPDATE	190
9.2.12	GRA UPDATE CONFIRM	190
9.2.13	Void	192
9.2.14	HANDOVER COMPLETE	192
9.2.15	HANDOVER FAILURE	194
9.2.16	HANDOVER FROM GERAN Iu COMMAND.....	194
9.2.17	INITIAL DIRECT TRANSFER	194
9.2.18	INTER SYSTEM TO CDMA2000 HANDOVER COMMAND	195
9.2.19	INTER SYSTEM TO UTRAN HANDOVER COMMAND	195
9.2.20	LCS DOWNLINK INFORMATION	195
9.2.20a	POSITION REPORT REQUEST	195
9.2.21	LCS UPLINK INFORMATION.....	196
9.2.21a	POSITION REPORT RESPONSE	196
9.2.21b	POSITION UPDATE INDICATION	197
9.2.22	MEASUREMENT INFORMATION	197
9.2.22a	MEASUREMENT ORDER	197
9.2.23	MEASUREMENT REPORT.....	198
9.2.24	MES CAPABILITY ENQUIRY.....	199
9.2.25	MES CAPABILITY INFORMATION.....	199
9.2.26	MES CAPABILITY INFORMATION CONFIRM.....	200
9.2.26a	RAB BINDING REQUEST	201
9.2.26b	RAB BINDING RESPONSE	202
9.2.27a	RAB UPPER LAYER RECONFIGURATION.....	203
9.2.27b	RAB UPPER LAYER RECONFIGURATION COMPLETE.....	203
9.2.28	RADIO BEARER RECONFIGURATION	204
9.2.29	RADIO BEARER RECONFIGURATION COMPLETE	207
9.2.30	RADIO BEARER RECONFIGURATION FAILURE	208
9.2.31	RADIO BEARER RELEASE.....	208
9.2.32	RADIO BEARER RELEASE COMPLETE.....	210
9.2.33	RADIO BEARER RELEASE FAILURE	211
9.2.34	RADIO BEARER SETUP.....	212
9.2.35	RADIO BEARER SETUP COMPLETE	215
9.2.35a	CHANNEL CHANGE PREPARATION COMPLETE	215
9.2.36	RADIO BEARER SETUP FAILURE	217
9.2.37	RRC CONNECTION REJECT	217
9.2.38	RRC CONNECTION RELEASE	217
9.2.39	RRC CONNECTION RELEASE COMPLETE	218
9.2.40	RRC CONNECTION REQUEST.....	219
9.2.41	RRC CONNECTION SETUP	219
9.2.42	RRC CONNECTION SETUP COMPLETE	220
9.2.43	RRC STATUS	222
9.2.44	RRC FAILURE INFO	223
9.2.45	SECURITY MODE COMMAND.....	223
9.2.46	SECURITY MODE COMPLETE.....	224
9.2.47	SECURITY MODE FAILURE	225
9.2.48	SIGNALLING CONNECTION RELEASE.....	225
9.2.49	SIGNALLING CONNECTION RELEASE INDICATION.....	226
9.2.50	Void	226
9.2.51	Void	226
9.2.52	Void	226
9.2.53	Void	226
9.2.54	Void	226
9.2.55	Void	226
9.2.56	UPLINK DIRECT TRANSFER	226
9.2.57	GERAN Iu mode DTM REQUEST.....	227
9.2.58	GERAN Iu mode DTM REJECT	227
9.2.59	Downlink Key Exchange	228
9.2.60	Uplink Key Exchange.....	228
9.3	Information Elements	229
9.3.1	Activation Time	229
9.3.2	BA List Pref.....	229

9.3.3	BA Range	229
9.3.4	Capability Update Requirement.....	229
9.3.5	CDMA2000 MES security capability	230
9.3.6	Cell Channel Description.....	230
9.3.7	Cell Description	230
9.3.7a	GMR-1 Spotbeam Description	230
9.3.8	Cell Update Cause	231
9.3.9	Channel Description	231
9.3.10	Channel Description 2	231
9.3.11	Channel Mode.....	231
9.3.12	Channel Mode 2.....	231
9.3.13	Ciphering Algorithm.....	232
9.3.14	Ciphering Mode Info	232
9.3.15	CN Domain Identity.....	232
9.3.16	Void	233
9.3.17	CN Information Info	233
9.3.18	Void	233
9.3.19	DCH Description	233
9.3.20	Dynamic ARFCN Mapping	233
9.3.21	Establishment Cause	233
9.3.22	Expiration Time Factor	234
9.3.23	Extension	234
9.3.24	Failure Cause	234
9.3.25	Failure Cause and Error Information	235
9.3.26	Frequency Channel Sequence	235
9.3.27	Frequency List	235
9.3.28	Frequency Short List.....	235
9.3.29	GERAN DRX Cycle Length Coefficient.....	235
9.3.30	GRA Identity	235
9.3.30a	GMR-1 Cell Identity	236
9.3.31	GRA Update Cause.....	236
9.3.32	G-RNTI.....	236
9.3.33	GSM MES Security Capability.....	237
9.3.34	Handover Reference	237
9.3.34a	Handover Traffic Carrier Info.....	237
9.3.35	Initial MES Identity	238
9.3.36	Integrity Check Info.....	239
9.3.37	Integrity Protection Activation Info.....	239
9.3.38	Integrity Protection Algorithm.....	240
9.3.39	Integrity Protection Mode Info	240
9.3.40	Void	240
9.3.41	Intra Domain NAS Node Selector	240
9.3.42	Mobile Allocation.....	241
9.3.43	Mobile Time Difference	241
9.3.44	MES GERAN A/Gb mode Radio Access Capability	241
9.3.45	MES GERAN Iu mode Radio Access Capability	242
9.3.45a	GMPRS Terminal Type Identifier	243
9.3.46	MES GERAN Iu mode RLC Capability	243
9.3.47	MES RF Capability GSM.....	244
9.3.48	MES Multi-Mode and Multi-RAT Capability	247
9.3.49	MES Measurement Capability.....	247
9.3.50	MES Positioning Capability	248
9.3.51	MES Timers and Constants in RRC-Connected mode	249
9.3.51a	MES Additional Timers and Constants in RRC-Connected mode	250
9.3.52	MultiRate Configuration.....	250
9.3.53	Multislot Allocation.....	250
9.3.54	NAS Message	250
9.3.55	NAS Synchronization Info.....	251
9.3.56	NAS System Information GSM-MAP.....	251
9.3.57	Paging Cause	251
9.3.58	Paging Record Type Identifier.....	252
9.3.59	PDCP Capability.....	252

9.3.59a	Data Compression Parameters	254
9.3.60	PDCP Info.....	255
9.3.61	PDCP SN Info.....	258
9.3.62	Physical Channel Configuration	258
9.3.62a	Physical Channel Description	258
9.3.63	PLMN Identity.....	260
9.3.64	Power Command	260
9.3.65	Power Command and Access Type	260
9.3.66	Void	261
9.3.67	Void	261
9.3.68	Void	261
9.3.69	Protocol Error Cause.....	261
9.3.70	Protocol Error Indicator	261
9.3.71	Protocol Error Information	261
9.3.72	RAB Identity.....	262
9.3.73	RAB Info	262
9.3.74	RAB Info Post.....	262
9.3.74a	RAB Info to Relocate	263
9.3.75	RAB Information for Setup	264
9.3.75a	RAB Information for Handover.....	265
9.3.76	RAB Information to Reconfigure	265
9.3.77	RB Activation Time Info	266
9.3.78	RB COUNT-C Information	266
9.3.79	RB COUNT-C MSB Information.....	267
9.3.80	RB Identity.....	267
9.3.80a	RRB Identity	267
9.3.81	RB Information to Be Affected.....	267
9.3.82	RB Information to Reconfigure	268
9.3.82a	PDCP - RB Information to Reconfigure.....	268
9.3.83	RB Information to Release	268
9.3.84	RB Information to Setup	269
9.3.84a	PDCP - RB Information to Setup.....	269
9.3.84b	RB CipheringSynchronization	270
9.3.85	RB Timer Indicator	270
9.3.86	RB with PDCP Information	271
9.3.87	Void	271
9.3.88	Re-Establishment timer.....	271
9.3.89	Rejection Cause	271
9.3.90	Release Cause	272
9.3.91	RLC Info.....	272
9.3.92	RLC HFN IE.....	273
9.3.93	RPLMN Information.....	273
9.3.94	RRC Cause.....	273
9.3.95	RRC Packet Downlink Assignment.....	274
9.3.95a	RRC Packet Downlink Assignment 2	274
9.3.96	RRC Packet Uplink Assignment.....	274
9.3.96a	RRC Packet Uplink Assignment 2	274
9.3.97	RRC State Indicator	274
9.3.98	RRC Transaction Identifier.....	274
9.3.98a	Reference	275
9.3.99	PDCH Description	275
9.3.100	Security Capability	275
9.3.101	Signalling RB Information To Setup	276
9.3.102	START.....	276
9.3.103	Starting Time	277
9.3.104	Synchronization Indication	277
9.3.105	Time Difference	277
9.3.106	Timing Advance	277
9.3.107	Transmission RLC Discard.....	277
9.3.108	UE UTRAN Radio Access Capability.....	278
9.3.108a	UE UTRAN Predefined Configuration Status Information	278
9.3.109	UE UTRAN Radio Access Capability Extension	278

9.3.110	UE CDMA2000 Radio Access Capability.....	279
9.3.110a	UE Software Version Indicator.....	279
9.3.111	UTRAN Freq List.....	279
9.3.112	Wait Time.....	279
9.3.113	Iu mode Channel Request Description.....	280
9.3.114	Wait Indication.....	280
9.3.115	Void.....	281
9.3.116	PDCP Context Relocation Info.....	281
9.3.117	RB mapping info.....	281
9.3.118	Interleaving.....	281
9.3.119	Mode.....	281
9.3.120	Modulation.....	281
9.3.121	Added or Reconfigured DL TrCH information.....	281
9.3.122	Added or Reconfigured UL TrCH information.....	281
9.3.123	Deleted DL TrCH information.....	282
9.3.124	Deleted UL TrCH information.....	282
9.3.125	DL TrCH Information Common For All Transport Channels.....	282
9.3.126	Semi-static Transport Format Information.....	282
9.3.127	TFCS Explicit Configuration.....	282
9.3.128	Void.....	282
9.3.129	TFCS Removal Information.....	282
9.3.130	Transport Channel Identity.....	282
9.3.131	TFC.....	282
9.3.132	Transport Format Combination Set.....	282
9.3.133	Transport Format Set.....	282
9.3.134	UL TrCH Information Common For All Transport Channels.....	282
9.3.135	Upper Layer Bearer Info.....	282
9.3.136	RLC Sequence Number.....	283
9.3.137	Carrier Reconfiguration Type.....	283
9.3a	Information element definitions.....	283
9.4	Multiplicity values and type constraint values.....	287
9.4a	Constant definitions.....	288
10	Protocol timers, counters, other parameters and default configurations.....	288
10.1	Timers for MES.....	288
10.1a	Timers on the network side.....	289
10.2	Counters for MES.....	289
10.3	MES constants and parameters.....	290
10.3a	Network constants and parameters.....	290
10.4	MES variables.....	290
10.4.0	General.....	290
10.4.1	CELL_UPDATE_STARTED.....	291
10.4.2	CIPHERING_STATUS.....	292
10.4.3	ESTABLISHED_SIGNALLING_CONNECTIONS.....	292
10.4.4	ESTABLISHMENT_CAUSE.....	292
10.4.5	ESTABLISHED_RABS.....	293
10.4.6	FAILURE_CAUSE.....	294
10.4.7	FAILURE_INDICATOR.....	294
10.4.8	GRA_IDENTITY.....	294
10.4.9	G_RNTI.....	294
10.4.10	INITIAL_MES_IDENTITY.....	295
10.4.11	INCOMPATIBLE_SECURITY_RECONFIGURATION.....	295
10.4.12	INTEGRITY_PROTECTION_ACTIVATION_INFO.....	295
10.4.13	INTEGRITY_PROTECTION_INFO.....	295
10.4.14	INVALID_CONFIGURATION.....	296
10.4.14a	LATEST_CONFIGURED_CN_DOMAIN.....	297
10.4.15	MES_CAPABILITY_REQUESTED.....	297
10.4.16	MES_CAPABILITY_TRANSFERRED.....	297
10.4.17	ORDERED_RECONFIGURATION.....	298
10.4.18	PDCP_SN_INFO.....	298
10.4.19	PROTOCOL_ERROR_INDICATOR.....	299
10.4.20	PROTOCOL_ERROR_INFORMATION.....	299