

# ETSI TS 101 376-4-13 V3.1.1 (2009-07)

---

*Technical Specification*

**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**

---

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/e7c47690-ec33-476b-988f-9cc2034a9b03/etsi-ts-101-376-4-13-v3.1.1-2009-07>



---

Reference

DTS/SES-00309-4-13

---

Keywords

3G, 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**

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the 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:

[http://portal.etsi.org/chaicor/ETSI\\_support.asp](http://portal.etsi.org/chaicor/ETSI_support.asp)

---

**Copyright Notification**

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2009.  
All rights reserved.

**DECT**<sup>TM</sup>, **PLUGTESTS**<sup>TM</sup>, **UMTS**<sup>TM</sup>, **TIPHON**<sup>TM</sup>, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

**3GPP**<sup>TM</sup> is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**LTE**<sup>TM</sup> is a Trade Mark of ETSI currently being registered

for the benefit of its Members and of the 3GPP Organizational Partners.

**GSM**<sup>®</sup> and the GSM logo are Trade Marks registered and owned by the GSM Association.

# Contents

Intellectual Property Rights .....	14
Foreword.....	14
Introduction .....	15
1 Scope .....	17
1.1 General .....	17
1.2 Scope of the Technical Specification .....	17
1.3 Application to the interface structures.....	17
1.4 Structure of layer 3 procedures.....	17
1.5 Void.....	17
1.6 Applicability of implementations .....	17
2 References .....	18
2.1 Normative references .....	18
2.2 Informative references.....	20
3 Definitions, symbols and abbreviations .....	20
3.1 Definitions.....	20
3.2 Abbreviations .....	21
3.3 Random values .....	22
3.4 Specification Notations .....	22
4 RRC Functions and Services provided to upper layers.....	22
4.1 RRC Functions .....	22
4.2 RRC Services provided to upper layers.....	23
5 Services expected from lower layers.....	23
5.1 Services required from layer 2 and physical layers.....	23
5.2 Signalling Radio Bearers.....	23
6 RRC Protocol modes and states .....	24
6.1 General .....	24
6.2 Relation between Iu mode and A/Gb mode.....	24
6.2.1 Handover between Iu and A/Gb modes .....	24
6.2.2 Cell reselection between Iu and A/Gb mode .....	24
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.....	25
6.4 RRC modes and states .....	25
6.4.1 RRC-Idle Mode .....	25
6.4.1.1 General .....	25
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.....	26
6.4.2.3 Transition from RRC-Cell_Shared state to RRC-Cell_Dedicated state .....	26
6.4.2.4 Transition from RRC-Cell_Shared state to RRC-GRA_PCH state.....	26
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.....	27
6.4.3.1 General .....	27
6.4.3.2 Transition from RRC-Cell_Dedicated state to RRC-Cell_Shared state .....	27
6.4.3.3 Transition from RRC-Cell_Dedicated state to RRC-Idle Mode.....	27
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.....	29
6.4.4.7	Transfer and update of system information.....	29
7	Radio Resource Control procedures.....	29
7.1	General .....	29
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 .....	30
7.3.1	General.....	30
7.3.2	Broadcast of Iu mode specific System Information.....	30
7.4	Paging procedure.....	30
7.4.1	General.....	30
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.....	33
7.5.1	RRC connection establishment.....	33
7.5.1.1	General.....	34
7.5.1.2	Initiation.....	34
7.5.1.3	RRC CONNECTION REQUEST message contents to set.....	34
7.5.1.4	Reception of an RRC CONNECTION REQUEST message by the GERAN.....	34
7.5.1.5	T300 timeout.....	34
7.5.1.6	Abortion of RRC connection establishment.....	35
7.5.1.7	Reception of an RRC CONNECTION SETUP message by the MES .....	35
7.5.1.8	Cell re-selection .....	37
7.5.1.9	Invalid RRC CONNECTION SETUP message.....	37
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
7.5.2.1	General.....	39
7.5.2.2	Initiation.....	39
7.5.2.3	Reception of an RRC CONNECTION RELEASE message by the MES.....	39
7.5.2.4	Invalid RRC CONNECTION RELEASE message.....	40
7.5.2.5	Cell re-selection or radio link failure .....	40
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.....	41
7.5.2.8	Detection of loss of dedicated physical channel by GERAN in RRC-Cell_Dedicated state.....	41
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 .....	43
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
7.8.1.1	General .....	47
7.8.1.2	Initiation .....	47
7.8.1.3	CELL UPDATE message contents to set .....	50
7.8.1.4	Reception of an CELL UPDATE message by the GERAN .....	50
7.8.1.5	Reception of the CELL UPDATE CONFIRM message by the MES .....	51
7.8.1.6	Transmission of a response message to GERAN .....	53
7.8.1.7	Physical channel failure .....	55
7.8.1.8	Unsupported configuration by the MES .....	57
7.8.1.9	Invalid configuration .....	58
7.8.1.10	Incompatible simultaneous reconfiguration .....	59
7.8.1.10a	Security reconfiguration during Cell update procedure .....	61
7.8.1.11	Void .....	61
7.8.1.12	Invalid CELL UPDATE CONFIRM message .....	61
7.8.1.13	T302 expiry or cell reselection .....	62
7.8.1.14	T314 expiry .....	64
7.8.1.15	T315 expiry .....	65
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> .....	66
7.8.1.17.1	General .....	66
7.8.1.17.2	Initiation .....	66
7.8.1.17.3	MES fails to complete an inter-RAT cell reselection .....	66
7.8.1.18	Inter-RAT cell reselection from GERAN <i>Iu mode</i> .....	66
7.8.1.18.1	General .....	66
7.8.1.18.2	Initiation .....	67
7.8.1.18.3	Successful cell reselection .....	67
7.8.1.18.4	MES fails to complete an inter-RAT cell reselection .....	67
7.8.2	GRA update procedure .....	67
7.8.2.1	General .....	68
7.8.2.2	Initiation .....	68
7.8.2.3	GRA UPDATE message contents to set .....	69
7.8.2.4	Reception of an GRA UPDATE message by the GERAN .....	69
7.8.2.5	Reception of the GRA UPDATE CONFIRM message by the MES .....	70
7.8.2.6	Transmission of a response message to GERAN .....	71
7.8.2.7	Invalid configuration .....	71
7.8.2.8	Incompatible simultaneous reconfiguration .....	72
7.8.2.9	Confirmation error of GRA ID list .....	73
7.8.2.10	Invalid CELL GRA UPDATE CONFIRM message .....	74
7.8.2.11	T302 expiry or cell reselection .....	75
7.8.3	GERAN mobility information .....	76
7.8.3.1	General .....	77
7.8.3.2	Initiation .....	77
7.8.3.3	Reception of GERAN MOBILITY INFORMATION message by the MES .....	77
7.8.3.4	Reception of an GERAN MOBILITY INFORMATION CONFIRM message by the GERAN .....	80
7.8.3.5	Cell re-selection .....	80
7.8.3.6	Incompatible simultaneous security reconfiguration .....	81
7.8.3.7	Invalid GERAN MOBILITY INFORMATION message .....	81
7.8.4	Inter-mode handover from GERAN <i>Iu mode</i> .....	81
7.9	Procedures for System Information transmission and Measurement reporting in RRC-Cell_Dedicated state .....	81
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 .....	82
7.9.2.2.3	Deriving the GSM Neighbour Cell list from the BSICs and the BCCH Allocation .....	82
7.9.2.2.4	Deriving the Neighbour Cell list from the GSM Neighbour Cell list and the 3G Neighbour Cell list .....	82

7.9.2.2.5	Real Time Differences.....	82
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	Handover to UTRAN procedure .....	83
7.10.1	General.....	83
7.10.2	Initiation.....	83
7.10.3	Reception of INTER SYSTEM TO UTRAN HANDOVER COMMAND message by the MES.....	83
7.10.4	Successful completion of the inter-RAT handover.....	83
7.10.5	Unsuccessful inter-rat handover at the MES side .....	84
7.10.6	Reception of an HANDOVER FAILURE message by GERAN in Iu mode.....	85
7.11	Handover to CDMA2000 procedure .....	85
7.11.1	General.....	85
7.11.2	Initiation.....	85
7.11.3	Reception of INTERSYSTEM TO CDMA2000 HANDOVER COMMAND message by the MES.....	85
7.11.4	Successful completion of the inter-RAT handover.....	86
7.11.5	Unsuccessful inter-rat handover at the MES side .....	86
7.11.6	Reception of an HANDOVER FAILURE message by GERAN in Iu mode.....	86
7.12	Mapping of user data substreams onto timeslots in a multislot configuration.....	87
7.13	Application Procedures .....	87
7.13.1	LCS transfer.....	87
7.13.1.1	General .....	87
7.13.1.2	Initiation of LCS transfer procedure in the GERAN .....	87
7.13.1.3	Reception of LCS DOWNLINK INFORMATION message by the MES .....	87
7.13.1.4	Transmission of a response message by the MES .....	88
7.13.1.5	Reception of a response message by the GERAN.....	88
7.13.1.6	Invalid LCS DOWNLINK INFORMATION message .....	88
7.13.2	Position Reporting .....	89
7.13.2.1	General .....	89
7.13.2.2	Initiation of position reporting procedure in the GERAN .....	89
7.13.2.3	Reception of POSITION REPORT REQUEST message by the MES.....	89
7.13.2.4	Transmission of a response message by the MES.....	89
7.13.2.5	Reception of a response message by the GERAN.....	89
7.13.2.6	Invalid POSITION REPORT REQUEST message.....	89
7.13.3	RAB Upper Layer Reconfiguration .....	90
7.13.3.1	General.....	90
7.13.3.2	Initiation of RAB Upper Layer Reconfiguration procedure in the GERAN .....	90
7.13.3.3	Reception of RAB Upper Layer Reconfiguration message by the MES.....	90
7.13.3.4	Transmission of a response message by the MES.....	90
7.13.3.5	Reception of a response message by the GERAN.....	90
7.14	Radio Bearer control procedures .....	91
7.14.1	Reconfiguration procedures .....	91
7.14.1.1	General .....	92
7.14.1.2	Initiation.....	92
7.14.1.3	Reception of RADIO BEARER SETUP or RADIO BEARER RECONFIGURATION or RADIO BEARER RELEASE message by the MES .....	93
7.14.1.4	Transmission of a response message by the MES, normal case.....	99
7.14.1.5	Reception of a response message by the GERAN, normal case.....	101
7.14.1.6	Unsupported configuration in the MES.....	102
7.14.1.7	Physical channel failure .....	102
7.14.1.8	Cell re-selection .....	103
7.14.1.9	Transmission of a response message by the MES, failure case.....	103
7.14.1.10	Reception of a response message by the GERAN, failure case .....	104
7.14.1.11	Invalid configuration.....	104
7.14.1.12	Incompatible simultaneous reconfiguration .....	104
7.14.1.12.1	Incompatible simultaneous security reconfiguration .....	105
7.14.1.12.2	Cell Update procedure during security reconfiguration.....	105
7.14.1.13	Invalid received message .....	106
7.14.1.14	Abnormal cases .....	106
7.14.2	MES initiated DTM procedures while in RRC-Cell_Dedicated-MAC-Dedicated state .....	108
7.14.2.1	General .....	108

7.14.2.2	Initiation of the DTM Request procedure by the MES .....	108
7.14.2.3	Reception of a GERAN Iu mode DTM REQUEST message by the GERAN .....	108
7.14.2.3.1	General .....	108
7.14.2.3.2	PDCH assignment .....	108
7.14.2.3.3	DTM Request rejection .....	109
7.14.2.3.4	Reception of a GERAN Iu mode DTM REJECT message by the MES, normal case.....	109
7.14.2.3.5	Invalid GERAN Iu mode DTM REJECT message.....	109
7.14.2.4	Abnormal cases .....	109
7.14.2.5	T3148 expiry .....	110
7.15	Signalling flow procedures.....	110
7.15.1	Signalling connection release procedure.....	110
7.15.1.1	General .....	110
7.15.1.2	Initiation of SIGNALLING CONNECTION RELEASE by the GERAN .....	110
7.15.1.3	Reception of SIGNALLING CONNECTION RELEASE by the MES .....	111
7.15.1.4	Invalid SIGNALLING CONNECTION RELEASE message.....	111
7.15.1.5	Invalid configuration.....	111
7.15.2	Signalling connection release indication procedure.....	112
7.15.2.1	General .....	112
7.15.2.2	Initiation.....	112
7.15.2.2a	RLC re-establishment, inter-mode handover or inter-RAT change .....	112
7.15.2.3	Reception of SIGNALLING CONNECTION RELEASE INDICATION by the GERAN .....	113
7.16	Security mode control .....	113
7.16.1	Security mode control.....	113
7.16.1.1	General .....	113
7.16.1.2	Initiation.....	113
7.16.1.2.1	Ciphering configuration change .....	113
7.16.1.2.2	Integrity protection configuration change.....	115
7.16.1.2.3	Reception of SECURITY MODE COMMAND message by the MES.....	117
7.16.1.2.4	Incompatible simultaneous security reconfiguration .....	122
7.16.1.2.5	Cell Update procedure during security reconfiguration.....	123
7.16.1.2.6	Invalid configuration .....	124
7.16.1.2.7	Reception of SECURITY MODE COMPLETE message by the GERAN.....	124
7.16.1.2.8	Invalid SECURITY MODE COMMAND message .....	126
7.17	Delivery of Non-Access stratum messages .....	127
7.17.1	Initial Direct transfer.....	127
7.17.1.1	General .....	127
7.17.1.2	Initiation of Initial direct transfer procedure in the MES .....	127
7.17.1.3	RLC re-establishment, inter-mode handover or inter-RAT change .....	128
7.17.1.4	Abortion of signalling connection establishment .....	128
7.17.1.5	Reception of INITIAL DIRECT TRANSFER message by the GERAN .....	129
7.17.2	Downlink Direct transfer .....	129
7.17.2.1	General .....	129
7.17.2.2	Initiation of downlink direct transfer procedure in the GERAN .....	129
7.17.2.3	Reception of a DOWNLINK DIRECT TRANSFER message by the MES.....	129
7.17.2.4	No signalling connection exists.....	130
7.17.2.5	Invalid DOWNLINK DIRECT TRANSFER message .....	130
7.17.3	Uplink Direct transfer .....	131
7.17.3.1	General .....	131
7.17.3.2	Initiation of uplink direct transfer procedure in the MES .....	131
7.17.3.3	RLC re-establishment, inter-mode handover or inter-RAT change .....	131
7.17.3.4	Reception of UPLINK DIRECT TRANSFER message by the GERAN .....	132
7.18	General procedures.....	132
7.18.1	Selection of initial MES identity.....	132
7.18.2	Actions when entering RRC-Idle mode from RRC-Connected mode .....	132
7.18.2a	Actions when entering CDMA2000 from GERAN Iu mode, RRC- Connected mode .....	133
7.18.3	Maintenance of Hyper Frame Numbers.....	134
7.18.4	START value calculation.....	135
7.18.5	Integrity protection .....	135
7.18.5.0	General .....	135
7.18.5.1	Integrity protection in downlink.....	136
7.18.5.2	Integrity protection in uplink.....	137
7.18.5.3	Calculation of message authentication code .....	137

7.18.6	Physical channel establishment.....	138
7.18.6.0	General.....	138
7.18.6.1	Finely synchronized cell case.....	138
7.18.6.2	Non synchronized cell case.....	139
7.18.6.3	Pseudo-synchronized cell case.....	139
7.18.6.4	Pre-synchronized cell case.....	140
7.18.7	Void.....	140
7.18.8	Link failure and Radio link failure criteria and actions upon link or radio link failure.....	140
7.18.9	Unsupported configuration.....	141
7.18.10	Invalid RLC/MAC control message notification.....	141
7.18.11	Actions related to Radio Bearer mapping.....	141
7.18.12	Network response times for DCH allocation.....	142
7.19	Generic actions on receipt and absence of an information element.....	142
7.19.1	CN information info.....	142
7.19.2	Signalling connection release indication.....	142
7.19.3	GERAN mobility information elements.....	143
7.19.3.1	GRA identity.....	143
7.19.3.2	Mapping info.....	143
7.19.4	MES information elements.....	143
7.19.4.1	Activation time.....	143
7.19.4.2	DRX parameters.....	144
7.19.4.2.1	CN domain specific DRX cycle length coefficients.....	144
7.19.4.2.2	GERAN DRX cycle length coefficient.....	144
7.19.4.2.3	Paging Group.....	144
7.19.4.3	Generic state transition rules depending on received information elements.....	144
7.19.4.4	Ciphering mode info.....	145
7.19.4.5	Integrity protection mode info.....	148
7.19.4.5.1	General.....	148
7.19.4.5.2	Initialization of Integrity Protection.....	148
7.19.4.5.3	Integrity Protection Re-configuration for SBSS Relocation.....	149
7.19.4.5.4	Integrity Protection modification in case of new keys or initialization of signalling connection..	150
7.19.4.6	Integrity check info.....	151
7.19.4.7	New G-RNTI.....	151
7.19.4.8	RRC Transaction Identifier.....	151
7.19.4.9	Capability Update Requirement.....	154
7.19.4.10	Position Update Timers.....	155
7.19.4.11	STARTn.....	155
7.19.5	Radio bearer information elements.....	155
7.19.5.1	Signalling RB information to setup list.....	155
7.19.5.2	RAB Information for Setup.....	155
7.19.5.3	RAB Information to Reconfigure.....	156
7.19.5.4	RB information to setup.....	156
7.19.5.5	RB information to be affected.....	158
7.19.5.6	RB information to reconfigure.....	158
7.19.5.7	RB Information to Release.....	159
7.19.5.8	RB with PDCP Information.....	159
7.19.5.9	Void.....	159
7.19.5.9a	RB Mapping Info.....	159
7.19.5.10	RLC Info.....	159
7.19.5.11	PDCP Info.....	159
7.19.5.11a	PDCP context relocation info.....	160
7.19.5.12	PDCP SN Info.....	161
7.19.5.13	NAS Synchronization Indicator.....	161
7.19.5.14	Physical Channel Configuration.....	161
7.19.6	Physical channel parameters.....	161
7.19.6.1	DCH Description.....	161
7.19.6.2	PDCH parameters.....	162
7.19.7	Transport channel information elements.....	162
8	Handling of unknown, unforeseen, and erroneous protocol data.....	162
8.1	General.....	162
8.2	CSN.1 violation or encoding error.....	163



8.3	Unknown or unforeseen message type .....	163
8.4	Unsolicited received message.....	164
8.5	Unexpected critical message extension .....	164
8.6	Message with error label: "Content part error".....	164
8.7	Unknown or unforeseen information element value, mandatory information element .....	165
8.8	Unexpected non-critical message extension.....	166
8.9	Message with error label: "Message escape".....	166
8.10	Handling of errors in nested information elements .....	166
8.11	Unknown or unforeseen information element value, optional information element coded in ASN1 .....	167
9	Message functional definitions and contents.....	168
9.1	General .....	168
9.1.1	Introduction.....	168
9.1.2	Repetitions of Structure, IE or field:.....	168
9.1.3	Message format and error labels .....	169
9.1.3.1	General .....	169
9.1.3.2	Message extension for new protocol version in RRC .....	170
9.1.3.2.1	Non-Critical extension.....	170
9.1.3.2.2	Critical extension.....	170
9.1.3.2.3	Extension of IEs .....	171
9.1.3.2.4	"Message escape" error label.....	171
9.2	Messages for Radio Resources management.....	172
9.2.1	General.....	172
9.2.1.1	References.....	172
9.2.1.2	Downlink RRC messages.....	174
9.2.1.3	Uplink RRC messages.....	175
9.2.1.3.1	Message definitions .....	175
9.2.2	CELL UPDATE.....	175
9.2.3	CELL UPDATE CONFIRM.....	175
9.2.4	DEDICATED PAGING REQUEST .....	178
9.2.5	DOWNLINK DIRECT TRANSFER .....	178
9.2.6	EXTENDED MEASUREMENT ORDER .....	178
9.2.7	EXTENDED MEASUREMENT REPORT .....	178
9.2.7a	ENHANCED MEASUREMENT REPORT .....	179
9.2.8	GERAN MOBILITY INFORMATION .....	179
9.2.9	GERAN MOBILITY INFORMATION CONFIRM .....	180
9.2.10	GERAN MOBILITY INFORMATION FAILURE.....	181
9.2.11	GRA UPDATE .....	181
9.2.12	GRA UPDATE CONFIRM.....	182
9.2.13	Void .....	183
9.2.14	HANDOVER COMPLETE .....	183
9.2.15	HANDOVER FAILURE .....	184
9.2.16	HANDOVER FROM GERAN Iu COMMAND.....	185
9.2.17	INITIAL DIRECT TRANSFER .....	185
9.2.18	INTER SYSTEM TO CDMA2000 HANDOVER COMMAND .....	186
9.2.19	INTER SYSTEM TO UTRAN HANDOVER COMMAND .....	186
9.2.20	LCS DOWNLINK INFORMATION .....	186
9.2.20a	POSITION REPORT REQUEST .....	187
9.2.21	LCS UPLINK INFORMATION.....	188
9.2.21a	POSITION REPORT RESPONSE .....	188
9.2.22	MEASUREMENT INFORMATION .....	189
9.2.22a	MEASUREMENT ORDER .....	189
9.2.23	MEASUREMENT REPORT.....	189
9.2.24	MES CAPABILITY ENQUIRY.....	190
9.2.25	MES CAPABILITY INFORMATION.....	190
9.2.26	MES CAPABILITY INFORMATION CONFIRM.....	191
9.2.27a	RAB UPPER LAYER RECONFIGURATION.....	192
9.2.27b	RAB UPPER LAYER RECONFIGURATION COMPLETE.....	193
9.2.28	RADIO BEARER RECONFIGURATION .....	193
9.2.29	RADIO BEARER RECONFIGURATION COMPLETE .....	196
9.2.30	RADIO BEARER RECONFIGURATION FAILURE .....	197
9.2.31	RADIO BEARER RELEASE.....	197

9.2.32	RADIO BEARER RELEASE COMPLETE.....	200
9.2.33	RADIO BEARER RELEASE FAILURE.....	201
9.2.34	RADIO BEARER SETUP.....	201
9.2.35	RADIO BEARER SETUP COMPLETE.....	204
9.2.36	RADIO BEARER SETUP FAILURE.....	205
9.2.37	RRC CONNECTION REJECT.....	205
9.2.38	RRC CONNECTION RELEASE.....	205
9.2.39	RRC CONNECTION RELEASE COMPLETE.....	206
9.2.40	RRC CONNECTION REQUEST.....	207
9.2.41	RRC CONNECTION SETUP.....	207
9.2.42	RRC CONNECTION SETUP COMPLETE.....	208
9.2.43	RRC STATUS.....	209
9.2.44	RRC FAILURE INFO.....	210
9.2.45	SECURITY MODE COMMAND.....	210
9.2.46	SECURITY MODE COMPLETE.....	211
9.2.47	SECURITY MODE FAILURE.....	212
9.2.48	SIGNALLING CONNECTION RELEASE.....	212
9.2.49	SIGNALLING CONNECTION RELEASE INDICATION.....	213
9.2.50	Void.....	213
9.2.51	SYSTEM INFORMATION 5.....	213
9.2.52	SYSTEM INFORMATION 5bis.....	213
9.2.53	SYSTEM INFORMATION 5ter.....	213
9.2.54	SYSTEM INFORMATION 6.....	213
9.2.55	Void.....	213
9.2.56	UPLINK DIRECT TRANSFER.....	214
9.2.57	GERAN Iu mode DTM REQUEST.....	214
9.2.58	GERAN Iu mode DTM REJECT.....	215
9.3	Information Elements.....	215
9.3.1	Activation Time.....	215
9.3.2	BA List Pref.....	216
9.3.3	BA Range.....	216
9.3.4	Capability Update Requirement.....	216
9.3.5	CDMA2000 MES security capability.....	216
9.3.6	Cell Channel Description.....	216
9.3.7	Cell Description.....	216
9.3.7a	GMR-1 Spotbeam Description.....	217
9.3.8	Cell Update Cause.....	217
9.3.9	Channel Description.....	218
9.3.10	Channel Description 2.....	218
9.3.11	Channel Mode.....	218
9.3.12	Channel Mode 2.....	218
9.3.13	Ciphering Algorithm.....	218
9.3.14	Ciphering Mode Info.....	218
9.3.15	CN Domain Identity.....	219
9.3.16	CN Domain Specific DRX Cycle Length Coefficient.....	219
9.3.17	CN Information Info.....	219
9.3.18	CN Information Info Full.....	220
9.3.19	DCH Description.....	220
9.3.20	Dynamic ARFCN Mapping.....	220
9.3.21	Establishment Cause.....	220
9.3.22	Expiration Time Factor.....	221
9.3.23	Extension.....	221
9.3.24	Failure Cause.....	221
9.3.25	Failure Cause and Error Information.....	222
9.3.26	Frequency Channel Sequence.....	222
9.3.27	Frequency List.....	222
9.3.28	Frequency Short List.....	222
9.3.29	GERAN DRX Cycle Length Coefficient.....	222
9.3.30	GRA Identity.....	222
9.3.30a	GMR-1 Cell Identity.....	223
9.3.31	GRA Update Cause.....	223
9.3.32	G-RNTI.....	223

9.3.33	GSM MES Security Capability.....	224
9.3.34	Handover Reference .....	224
9.3.35	Initial MES Identity .....	225
9.3.36	Integrity Check Info.....	225
9.3.37	Integrity Protection Activation Info.....	226
9.3.38	Integrity Protection Algorithm.....	226
9.3.39	Integrity Protection Mode Info .....	226
9.3.40	Void .....	227
9.3.41	Intra Domain NAS Node Selector .....	227
9.3.42	Mobile Allocation.....	227
9.3.43	Mobile Time Difference .....	227
9.3.44	MES GERAN A/Gb mode Radio Access Capability .....	228
9.3.45	MES GERAN Iu mode Radio Access Capability .....	228
9.3.45a	GMPRS Terminal Type Identifier .....	229
9.3.46	MES GERAN Iu mode RLC Capability .....	229
9.3.47	MES RF Capability GSM.....	230
9.3.48	MES Multi-Mode and Multi-RAT Capability .....	233
9.3.49	MES Measurement Capability.....	234
9.3.50	MES Positioning Capability .....	235
9.3.51	MES Timers and Constants in RRC-Connected mode .....	235
9.3.52	MultiRate Configuration.....	236
9.3.53	Multislot Allocation.....	236
9.3.54	NAS Message .....	236
9.3.55	NAS Synchronization Info.....	237
9.3.56	NAS System Information GSM-MAP.....	237
9.3.57	Paging Cause .....	237
9.3.58	Paging Record Type Identifier.....	238
9.3.59	PDCP Capability.....	238
9.3.60	PDCP Info.....	240
9.3.61	PDCP SN Info.....	243
9.3.62	Physical Channel Configuration .....	243
9.3.62a	Physical Channel Description .....	243
9.3.63	PLMN Identity.....	245
9.3.64	Power Command .....	245
9.3.65	Power Command and Access Type .....	245
9.3.66	Void .....	245
9.3.67	Void .....	245
9.3.68	Void .....	245
9.3.69	Protocol Error Cause.....	246
9.3.70	Protocol Error Indicator .....	246
9.3.71	Protocol Error Information .....	246
9.3.72	RAB Identity.....	247
9.3.73	RAB Info .....	247
9.3.74	RAB Info Post.....	247
9.3.75	RAB Information for Setup .....	248
9.3.76	RAB Information to Reconfigure .....	248
9.3.77	RB Activation Time Info .....	249
9.3.78	RB COUNT-C Information .....	249
9.3.79	RB COUNT-C MSB Information.....	250
9.3.80	RB Identity.....	250
9.3.80a	RRB Identity.....	250
9.3.81	RB Information to Be Affected.....	250
9.3.82	RB Information to Reconfigure .....	251
9.3.82a	PDCP - RB Information to Reconfigure .....	251
9.3.83	RB Information to Release .....	252
9.3.84	RB Information to Setup.....	252
9.3.84a	PDCP - RB Information to Setup.....	252
9.3.85	RB Timer Indicator.....	253
9.3.86	RB with PDCP Information.....	253
9.3.87	Void .....	253
9.3.88	Re-Establishment timer.....	253
9.3.89	Rejection Cause .....	254

9.3.90	Release Cause .....	254
9.3.91	RLC Info .....	255
9.3.92	RLC HFN IE .....	255
9.3.93	RPLMN Information .....	255
9.3.94	RRC Cause .....	256
9.3.95	RRC Packet Downlink Assignment .....	256
9.3.95a	RRC Packet Downlink Assignment 2 .....	256
9.3.96	RRC Packet Uplink Assignment .....	256
9.3.96a	RRC Packet Uplink Assignment 2 .....	257
9.3.97	RRC State Indicator .....	257
9.3.98	RRC Transaction Identifier .....	257
9.3.98a	Reference .....	257
9.3.99	PDCH Description .....	258
9.3.100	Security Capability .....	258
9.3.101	Signalling RB Information To Setup .....	259
9.3.102	START .....	259
9.3.103	Starting Time .....	259
9.3.104	Synchronization Indication .....	260
9.3.105	Time Difference .....	260
9.3.106	Timing Advance .....	260
9.3.107	Transmission RLC Discard .....	260
9.3.108	UE UTRAN Radio Access Capability .....	260
9.3.108a	UE UTRAN Predefined Configuration Status Information .....	261
9.3.109	UE UTRAN Radio Access Capability Extension .....	261
9.3.110	UE CDMA2000 Radio Access Capability .....	262
9.3.111	UTRAN Freq List .....	262
9.3.112	Wait Time .....	262
9.3.113	Iu mode Channel Request Description .....	262
9.3.114	Wait Indication .....	263
9.3.115	Void .....	263
9.3.116	PDCP Context Relocation Info .....	263
9.3.117	RB mapping info .....	264
9.3.118	Interleaving .....	264
9.3.119	Mode .....	264
9.3.120	Modulation .....	264
9.3.121	Added or Reconfigured DL TrCH information .....	264
9.3.122	Added or Reconfigured UL TrCH information .....	264
9.3.123	Deleted DL TrCH information .....	264
9.3.124	Deleted UL TrCH information .....	264
9.3.125	DL TrCH Information Common For All Transport Channels .....	264
9.3.126	Semi-static Transport Format Information .....	264
9.3.127	TFCS Explicit Configuration .....	264
9.3.128	Void .....	265
9.3.129	TFCS Removal Information .....	265
9.3.130	Transport Channel Identity .....	265
9.3.131	TFC .....	265
9.3.132	Transport Format Combination Set .....	265
9.3.133	Transport Format Set .....	265
9.3.134	UL TrCH Information Common For All Transport Channels .....	265
9.3.135	Upper Layer Bearer Info .....	265
9.3a	Information element definitions .....	265
9.4	Multiplicity values and type constraint values .....	269
9.4a	Constant definitions .....	270
10	Protocol timers, counters, other parameters and default configurations .....	271
10.1	Timers for MES .....	271
10.1a	Timers on the network side .....	272
10.2	Counters for MES .....	272
10.3	MES constants and parameters .....	272
10.3a	Network constants and parameters .....	272
10.4	MES variables .....	273
10.4.0	General .....	273

10.4.1	CELL_UPDATE_STARTED.....	274
10.4.2	CIPHERING_STATUS.....	274
10.4.3	ESTABLISHED_SIGNALLING_CONNECTIONS.....	275
10.4.4	ESTABLISHMENT_CAUSE.....	275
10.4.5	ESTABLISHED_RABS.....	276
10.4.6	FAILURE_CAUSE.....	276
10.4.7	FAILURE_INDICATOR.....	277
10.4.8	GRA_IDENTITY.....	277
10.4.9	G_RNTI.....	277
10.4.10	INITIAL_MES_IDENTITY.....	278
10.4.11	INCOMPATIBLE_SECURITY_RECONFIGURATION.....	278
10.4.12	INTEGRITY_PROTECTION_ACTIVATION_INFO.....	278
10.4.13	INTEGRITY_PROTECTION_INFO.....	278
10.4.14	INVALID_CONFIGURATION.....	279
10.4.14a	LATEST_CONFIGURED_CN_DOMAIN.....	280
10.4.15	MES_CAPABILITY_REQUESTED.....	280
10.4.16	MES_CAPABILITY_TRANSFERRED.....	280
10.4.17	ORDERED_RECONFIGURATION.....	281
10.4.18	PDCP_SN_INFO.....	281
10.4.19	PROTOCOL_ERROR_INDICATOR.....	282
10.4.20	PROTOCOL_ERROR_INFORMATION.....	282
10.4.21	PROTOCOL_ERROR_REJECT.....	282
10.4.22	RB_TIMER_INDICATOR.....	283
10.4.23	RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.....	283
10.4.24	START_THRESHOLD.....	283
10.4.25	START_VALUE_TO_TRANSMIT.....	283
10.4.26	TRANSACTIONS.....	284
10.4.27	TIMERS_AND_CONSTANTS.....	284
10.4.28	UNSUPPORTED_CONFIGURATION.....	285
10.4.29	SECURITY_MODIFICATION.....	285
11	Specific functions.....	285
11.1	Provision and reception of RRC information between network nodes.....	285
11.1.1	General.....	285
11.1.2	General error handling for RRC messages exchanged between network nodes.....	286
11.1.3	RRC Information to target GERAN Iu mode BSS.....	287
11.1.4	RRC information, target BSS to source BSS.....	287
11.1.5	RRC messages exchanged between network nodes.....	288
11.1.5.0	RADIO BEARER RECONFIGURATION.....	288
11.1.5.1	INTER RAT or MODE HANDOVER INFO WITH MES CAPABILITIES.....	288
11.1.5.2	SBSS RELOCATION INFO.....	289
11.1.5.3	RFC 3095 CONTEXT INFO.....	292
11.2	Provision and reception of RRC security information between network nodes.....	293
11.2.1	General.....	293
11.2.2	RRC Security Information, from GERAN-A/Gb to GERAN-Iu.....	294
11.2.3	RRC Security Information, from GERAN Iu mode/UTRAN to GERAN Iu mode.....	294
11.2.4	RRC Security Information, from GERAN Iu to UTRAN.....	295
11.3	HFN mapping rules for radio bearer using non-transparent mode RLC.....	295
11.4	Calculated Transport Format Combination.....	296
11.5	Signalling TFC.....	296
<b>Annex A (informative):</b>	<b>Bibliography.....</b>	<b>297</b>
History.....		298