

ETSI TS 148 018 V13.2.0 (2016-08)



**Digital cellular telecommunications system (Phase 2+) (GSM);
General Packet Radio Service (GPRS);
Base Station System (BSS)
- Serving GPRS Support Node (SGSN);
BSS GPRS protocol (BSSGP)
(3GPP TS 48.018 version 13.2.0 Release 13)**



Reference

RTS/TSGG-0248018vd20

Keywords

GSM

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommitteeSupportStaff.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 2016.

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.

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	14
1 Scope	15
2 References	15
3 Abbreviations	17
3.1 Vocabulary	17
4 Logical configuration of the Gb-interface.....	18
4.1 High-level characteristics of the Gb-interface	18
4.2 Position of BSSGP within the protocol stack on the Gb-interface	18
5 Elements for layer-to-layer communication.....	19
5.1 Definition of service model	19
5.2 Service primitives provided by the BSSGP at a BSS	21
5.2.1 RL-DL-UNITDATA.ind.....	23
5.2.2 RL-UL-UNITDATA.req.....	23
5.2.3 (void)	24
5.2.3a RL-DL-MBMS-UNITDATA.ind	24
5.2.3b RL-UL-MBMS-UNITDATA.req	24
5.2.4 GMM-PAGING.ind.....	24
5.2.5 GMM-RA-CAPABILITY.ind	24
5.2.6 GMM-RA-CAPABILITY-UPDATE.req	24
5.2.7 GMM-RA-CAPABILITY-UPDATE.cnf	24
5.2.8 GMM-RADIO-STATUS.req	24
5.2.9 GMM-SUSPEND.req	24
5.2.10 GMM-SUSPEND.cnf	24
5.2.11 GMM-RESUME.req	24
5.2.12 GMM-RESUME.cnf	24
5.2.12a GMM-MS-REGISTRATION-ENQUIRY.req	25
5.2.12b GMM-MS-REGISTRATION-ENQUIRY.res	25
5.2.13 NM-FLUSH-LL.ind.....	25
5.2.14 NM-FLUSH-LL.res	25
5.2.15 NM-LLC-DISCARDED.req	25
5.2.16 NM-FLOW-CONTROL-BVC.req.....	25
5.2.17 NM-FLOW-CONTROL-BVC.cnf.....	25
5.2.18 NM-FLOW-CONTROL-MS.req	25
5.2.19 NM-FLOW-CONTROL-MS.cnf	25
5.2.19a NM-FLOW-CONTROL-PFC.req.....	25
5.2.19b NM-FLOW-CONTROL-PFC.cnf.....	25
5.2.20 NM-STATUS.req	26
5.2.21 NM-STATUS.ind	26
5.2.22 NM-BVC-BLOCK.req	26
5.2.23 NM-BVC-BLOCK.cnf	26
5.2.24 NM-BVC-UNBLOCK.req.....	26
5.2.25 NM-BVC-UNBLOCK.cnf.....	26
5.2.26 NM-BVC-RESET.req.....	26
5.2.27 NM-BVC-RESET.res	26
5.2.28 NM-BVC-RESET.ind.....	26
5.2.29 NM-BVC-RESET.cnf.....	26
5.2.30 NM-TRACE.ind	26
5.2.30a NW-OVERLOAD.ind	26
5.2.31 PFM-DOWNLOAD-BSS-PFC.req.....	27

5.2.32	PFM-CREATE-BSS-PFC.ind.....	27
5.2.33	PFM-CREATE-BSS-PFC.res.....	27
5.2.34	PFM-MODIFY-BSS-PFC.req.....	27
5.2.35	(void).....	27
5.2.36	(void).....	27
5.2.37	PFM-MODIFY-BSS-PFC.cnf.....	27
5.2.38	PFM-DELETE-BSS-PFC.ind.....	27
5.2.39	PFM-DELETE-BSS-PFC.res.....	27
5.2.39a	PFM-DELETE-BSS-PFC.req.....	27
5.2.39b	PFM-PS-HANDOVER-REQUIRED.req.....	27
5.2.39c	PFM-PS-HANDOVER-REQUIRED.cnf.....	27
5.2.39d	PFM-PS-HANDOVER-REQUEST.ind.....	28
5.2.39e	PFM-PS-HANDOVER-REQUEST.res.....	28
5.2.39f	PFM-PS-HANDOVER-COMPLETE.req.....	28
5.2.39g	PFM-PS-HANDOVER-CANCEL.req.....	28
5.2.40	LCS-LOCATE.ind.....	28
5.2.41	LCS-LOCATE.res.....	28
5.2.42	LCS-ABORT.ind.....	28
5.2.43	LCS-INFORMATION-TRANSFER.req.....	28
5.2.44	LCS-INFORMATION-TRANSFER.cnf.....	28
5.2.45	RIM-PDU-TRANSFER.req.....	28
5.2.46	RIM-PDU-TRANSFER.ind.....	28
5.2.47	(void).....	29
5.2.48	(void).....	29
5.2.49	(void).....	29
5.2.50	(void).....	29
5.2.51	(void).....	29
5.2.52	(void).....	29
5.2.53	MBMS-SESSION-START-REQUEST.ind.....	29
5.2.54	MBMS-SESSION-START-RESPONSE.res.....	29
5.2.55	MBMS-SESSION-STOP-REQUEST.ind.....	29
5.2.56	MBMS-SESSION-STOP-RESPONSE.res.....	29
5.2.57	MBMS-SESSION-UPDATE-REQUEST.ind.....	29
5.2.58	MBMS-SESSION-UPDATE-RESPONSE.res.....	29
5.3	Service primitives provided by the BSSGP at an SGSN.....	29
5.3.1	BSSGP-DL-UNITDATA.req.....	32
5.3.2	BSSGP-UL-UNITDATA.ind.....	33
5.3.3	(void).....	33
5.3.3a	BSSGP-DL-MBMS-UNITDATA.req.....	33
5.3.3b	BSSGP-UL-MBMS-UNITDATA.ind.....	33
5.3.4	GMM-PAGING.req.....	33
5.3.5	GMM-RA-CAPABILITY.req.....	33
5.3.6	GMM-RA-CAPABILITY-UPDATE.ind.....	33
5.3.7	GMM-RA-CAPABILITY-UPDATE.res.....	33
5.3.8	GMM-RADIO-STATUS.ind.....	33
5.3.9	GMM-SUSPEND.ind.....	33
5.3.10	GMM-RESUME.ind.....	33
5.3.10a	GMM-MS-REGISTRATION-ENQUIRY.ind.....	33
5.3.10b	GMM-MS-REGISTRATION-ENQUIRY.res.....	34
5.3.11	NM-FLUSH-LL.req.....	34
5.3.12	NM-FLUSH-LL.cnf.....	34
5.3.13	NM-LLC-DISCARDED.ind.....	34
5.3.14	NM-FLOW-CONTROL-BVC.ind.....	34
5.3.15	NM-FLOW-CONTROL-MS.ind.....	34
5.3.15a	NM-FLOW-CONTROL-PFC.ind.....	34
5.3.16	NM-STATUS.req.....	34
5.3.17	NM-STATUS.ind.....	34
5.3.18	NM-BVC-BLOCK.ind.....	34
5.3.19	NM-BVC-UNBLOCK.ind.....	34
5.3.20	NM-BVC-RESET.req.....	34
5.3.21	NM-BVC-RESET.res.....	35
5.3.22	NM-BVC-RESET.ind.....	35

5.3.23	NM-BVC-RESET.cnf.....	35
5.3.24	NM-TRACE.req.....	35
5.3.24a	NM-OVERLOAD-START.req.....	35
5.3.25	PFM-DOWNLOAD-BSS-PFC.ind.....	35
5.3.26	PFM-CREATE-BSS-PFC.req.....	35
5.3.27	PFM-CREATE-BSS-PFC.cnf.....	35
5.3.28	PFM-MODIFY-BSS-PFC.ind.....	35
5.3.29	PFM-MODIFY-BSS-PFC.res.....	35
5.3.30	PFM-DELETE-BSS-PFC.req.....	35
5.3.31	PFM-DELETE-BSS-PFC.cnf.....	35
5.3.31a	PFM-DELETE-BSS-PFC.ind.....	36
5.3.31b	PFM-PS-HANDOVER-REQUIRED.ind.....	36
5.3.31c	PFM-PS-HANDOVER-REQUIRED.res.....	36
5.3.31d	PFM-PS-HANDOVER-REQUEST.req.....	36
5.3.31e	PFM-PS-HANDOVER-REQUEST.cnf.....	36
5.3.31f	PFM-PS-HANDOVER-COMPLETE.ind.....	36
5.3.31g	PFM-PS-HANDOVER-CANCEL.ind.....	36
5.3.32	LCS-LOCATE.req.....	36
5.3.33	LCS-LOCATE.cnf.....	36
5.3.34	LCS-ABORT.req.....	36
5.3.35	LCS-INFORMATION-TRANSFER.ind.....	36
5.3.36	LCS-INFORMATION-TRANSFER.res.....	37
5.3.37	RIM-PDU-TRANSFER.req.....	37
5.3.38	RIM-PDU-TRANSFER.ind.....	37
5.3.39	(void).....	37
5.3.40	(void).....	37
5.3.41	(void).....	37
5.3.42	(void).....	37
5.3.43	(void).....	37
5.3.44	(void).....	37
5.3.45	MBMS-SESSION-START-REQUEST.req.....	37
5.3.46	MBMS-SESSION-START-RESPONSE.cnf.....	37
5.3.47	MBMS-SESSION-STOP-REQUEST.req.....	37
5.3.48	MBMS-SESSION-STOP-RESPONSE.cnf.....	37
5.3.49	MBMS-SESSION-UPDATE-REQUEST.req.....	37
5.3.50	MBMS-SESSION-UPDATE-RESPONSE.cnf.....	38
5.4	Primitive parameters.....	38
5.4.1	BSSGP Virtual Connection Identifier (BVCI).....	38
5.4.2	Link Selector Parameter (LSP).....	39
5.4.3	[functional-name] PDU.....	39
5.4.4	Network Service Entity Identifier (NSEI).....	40
5.4.5	BSS Context.....	40
5.4.6	MBMS Service Context.....	40
5.4.7	TLLI.....	40
6	User data and signalling procedures between RL and BSSGP SAPs.....	40
6.1	Downlink UNITDATA procedure.....	40
6.1.1	Abnormal conditions.....	43
6.2	Uplink UNITDATA procedure.....	43
6.2.1	Abnormal conditions.....	44
6.3	RA-CAPABILITY procedure.....	44
6.3.1	Abnormal conditions.....	44
6.4	Downlink MBMS-UNITDATA procedure.....	44
6.5	Uplink MBMS-UNITDATA procedure.....	44
6.6	Rerouting procedure in case of MOCN configuration for network sharing.....	45
6.6.1	General.....	45
6.6.2	Reroute Indication.....	45
6.6.3	Reroute complete.....	46
6.6.4	Abnormal Conditions.....	47
6.7	Rerouting procedure in case of GWCN configuration for network sharing.....	47
6.7.1	General.....	47
6.7.2	Reroute indication.....	47

6.7.3	Reroute complete	48
6.7.4	Abnormal Conditions.....	48
7	Signalling procedures between GMM SAPs	49
7.1	Paging procedure.....	49
7.1a	Paging procedure for Extended Coverage and eDRX	50
7.1a.1	Coverage Class and eDRX information available	50
7.1a.2	Coverage Class information not available, eDRX information available	50
7.1a.3	Coverage Class information available, eDRX information not available	51
7.2	Radio Access Capability Update procedure	51
7.2.1	Abnormal conditions.....	51
7.3	Radio Status procedure.....	51
7.4	SUSPEND procedure	52
7.4.1	Abnormal conditions.....	53
7.5	RESUME procedure.....	53
7.5.1	Abnormal conditions.....	53
7.6	MS Registration Enquiry.....	54
7.6.1	General.....	54
7.6.2	Registration enquiry.....	54
7.6.3	Registration response.....	54
8	Signalling procedures between NM SAPs	54
8.1	FLUSH-LL (logical link) procedure.....	54
8.1.1	Abnormal Conditions.....	56
8.2	Flow Control procedure.....	56
8.2.1	General model of operation	56
8.2.2	Mode of operation.....	56
8.2.3	Flow Control of Traffic from an SGSN to BSS.....	57
8.2.3.1	Control of the downlink throughput by the SGSN	57
8.2.3.2	Flow Control Conformance Definition	58
8.2.3.3	Response time within the SGSN to flow control messages.....	60
8.2.3.4	Frequency of sending BVC or MS or PFC Flow Control PDUs.....	60
8.2.3.5	FLOW-CONTROL PDUs.....	60
8.2.3.6	Condition of Bmax for MS after Initial Flow-Control-BVC.....	61
8.2.4	Flow Control of Uplink Traffic from a BSS to an SGSN	61
8.3	BVC blocking and unblocking procedure	61
8.3.1	PTP BVC	61
8.3.2	Signalling BVC.....	62
8.3.3	Abnormal Conditions.....	62
8.4	BVC-RESET procedure	63
8.4.1	Signalling BVC.....	64
8.4.2	PTP BVC	64
8.4.3	Abnormal Conditions.....	64
8.5	Trace procedure.....	65
8.6	Overload Control procedure	65
8.6.1	General.....	65
8.6.2	Overload Operation.....	65
8a	Signalling procedures between PFM SAPs	66
8a.1	Create BSS PFC procedure	66
8a.1.0	General.....	66
8a.1.0a	Allocation/Retention Priority handling	67
8a.1.1	Abnormal conditions.....	68
8a.2	Modify BSS PFC procedure.....	68
8a.2.1	Abnormal conditions.....	69
8a.3	Delete BSS PFC procedure	69
8a.4	PS Handover Required procedure	69
8a.4.1	Abnormal conditions.....	71
8a.5	PS Handover Request procedure	71
8a.5.1	Abnormal conditions.....	72
8a.6	PS Handover Complete procedure	73
8a.6.1	Abnormal conditions.....	74
8a.7	PS Handover Cancel procedure.....	74

8a.7.1	Abnormal conditions.....	75
8b	Signalling Procedures between LCS SAPs	75
8b.1	Location Procedure.....	75
8b.1.1	Unsuccessful Operation	75
8b.1.2	Abnormal Conditions.....	76
8b.1.3	Overload	76
8b.2	Position Command Procedure	76
8b.2.1	Position Command.....	76
8b.2.2	Position Response	76
8b.2.3	Unsuccessful Operation	77
8c	Signalling procedures between RIM SAPs	77
8c.1	General	77
8c.1.1	Introduction.....	77
8c.1.2	Definitions	77
8c.1.2.1	Controlling and serving nodes.....	77
8c.1.2.2	RIM association	78
8c.1.2.3	RIM variables.....	78
8c.1.3	RIM PDUs description.....	78
8c.1.3.1	RAN-INFORMATION-REQUEST PDU	78
8c.1.3.2	RAN-INFORMATION PDU	78
8c.1.3.3	RAN-INFORMATION-ACK PDU	79
8c.1.3.4	RAN-INFORMATION-ERROR PDU.....	79
8c.1.3.5	RAN-INFORMATION-APPLICATION-ERROR PDU	79
8c.1.4	RIM addressing and routing principles.....	79
8c.1.4.1	RIM routing address.....	79
8c.1.4.1.1	GERAN BSS identification.....	79
8c.1.4.1.2	UTRAN RNS identification	79
8c.1.4.1.3	E-UTRAN eNodeB identification	79
8c.1.4.1.4	eHRPD eAN identification	79
8c.1.4.2	Routing via the core network	80
8c.1.4.3	Address mirroring	80
8c.1.5	In-order delivery and reliable transfer - RSN.....	80
8c.1.5.1	General	80
8c.1.5.2	Allocating RSN values at the sending BSS	81
8c.1.5.3	Comparing RSN values at the receiving BSS	81
8c.1.6	RIM Protocol Version Number.....	81
8c.2	RIM procedures.....	82
8c.2.1	General.....	82
8c.2.2	RAN Information Request procedure	82
8c.2.2.1	RAN Information Request/Single Report procedure	82
8c.2.2.1.1	Initiation by the controlling BSS	82
8c.2.2.1.2	Reception of a valid RAN-INFORMATION-REQUEST/Single Report PDU by the serving BSS	83
8c.2.2.1.3	Reception of a valid RAN-INFORMATION/Single Report PDU by the controlling BSS	83
8c.2.2.1.4	Expiration of T(RIR) in the controlling BSS.....	83
8c.2.2.2	RAN Information Request/Multiple Report procedure	83
8c.2.2.2.1	Initiation by the controlling BSS	84
8c.2.2.2.2	Reception of a valid RAN-INFORMATION-REQUEST/Multiple Report PDU by the serving BSS	84
8c.2.2.2.3	Reception of a valid RAN-INFORMATION PDU/Initial Multiple Report PDU by the controlling BSS	85
8c.2.2.2.4	Expiration of T(RIR) in the controlling BSS.....	85
8c.2.2.3	RAN Information Request/Stop procedure	85
8c.2.2.3.1	Initiation by the controlling BSS	85
8c.2.2.3.2	Reception of a valid RAN-INFORMATION-REQUEST/Stop PDU by the serving BSS	85
8c.2.2.3.3	Reception of a valid RAN-INFORMATION/Stop PDU by the controlling BSS.....	86
8c.2.2.3.4	Expiration of T(RIR) in the controlling BSS.....	86
8c.2.3	RAN Information Send procedure	87
8c.2.3.1	Initiation by the serving BSS	87
8c.2.3.2	Reception of a valid RAN-INFORMATION PDU by the controlling BSS.....	88

8c.2.3.3	Reception of a valid RAN-INFORMATION-ACK PDU in the serving BSS.....	88
8c.2.3.4	Expiration of T(RI) in the serving BSS.....	88
8c.2.4	RAN Information Application Error procedure.....	89
8c.2.4.1	Initiation by the controlling BSS.....	89
8c.2.4.2	Reception of a valid RAN-INFORMATION-APPLICATION-ERROR PDU by the serving BSS.....	89
8c.2.4.3	Reception of a valid RAN-INFORMATION-ACK PDU by the controlling BSS.....	90
8c.2.4.4	Expiration of T(RIAE) in the controlling BSS.....	90
8c.2.5	RAN Information Error procedure.....	90
8c.3	Abnormal conditions.....	90
8c.3.0	General.....	90
8c.3.1	Abnormal conditions at the BSSGP level.....	91
8c.3.1.1	General.....	91
8c.3.1.2	RIM addressing error in BSS.....	91
8c.3.1.3	RIM addressing error in the CN.....	91
8c.3.1.4	RIM PDU addressed to a BSS not supporting RIM.....	91
8c.3.2	Abnormal conditions encountered in the RIM container.....	91
8c.3.2.1	Unknown RIM Application Identity.....	91
8c.3.2.2	Erroneous PDU Type Extension field.....	91
8c.3.2.3	Missing conditional IE.....	92
8c.3.2.4	Missing mandatory IE.....	92
8c.3.2.5	Syntactical error in an expected conditional IE.....	92
8c.3.2.6	Syntactical error in a mandatory IE.....	92
8c.3.2.7	Unexpected conditional IE.....	92
8c.3.2.8	Containers with out-of-sequence information elements.....	93
8c.3.2.9	Container with semantically incorrect content.....	93
8c.3.3	Unexpected RIM PDU.....	93
8c.3.4	RIM error reporting.....	93
8c.3.4.1	General.....	93
8c.3.4.2	Sending of a RAN-INFORMATION-ERROR PDU.....	93
8c.3.4.3	Reception of a RAN-INFORMATION-ERROR PDU in the BSS.....	93
8c.4	RIM timers.....	94
8c.5	Action upon deletion of a cell in a BSS.....	94
8c.5.0	General.....	94
8c.5.1	Actions due to the deletion of the cell.....	94
8c.5.2	Additional actions in the case the deleted cell is used as a source cell by RIM.....	95
8c.6	Specific requirements related to RIM applications.....	95
8c.6.0	General requirements.....	95
8c.6.1	Requirements related to the NACC RIM application.....	95
8c.6.2	SI3 application.....	96
8c.6.3	MBMS data channel application.....	96
8c.6.4	Requirements related to the SON Transfer RIM application.....	97
8c.6.5	Requirements related to the UTRA SI RIM application.....	97
8d	Signalling procedures between MBMS SAPs.....	98
8d.1	General.....	98
8d.2	MBMS Session Start.....	98
8d.2.1	Abnormal Conditions.....	100
8d.3	MBMS Session Stop.....	100
8d.3.1	Abnormal Conditions.....	100
8d.4	MBMS Session Update.....	100
8d.4.1	Abnormal Conditions.....	102
9	General Protocol Error Handling.....	102
10	PDU functional definitions and contents.....	102
10.1	General Structure Of A PDU.....	102
10.2	PDU functional definitions and contents at RL and BSSGP SAPs.....	103
10.2.1	DL-UNITDATA.....	103
10.2.2	UL-UNITDATA.....	104
10.2.3	RA-CAPABILITY.....	105
10.2.4	(void).....	106
10.2.5	DL-MBMS-UNITDATA.....	106
10.2.6	UL-MBMS-UNITDATA.....	106

10.3	PDU functional definitions and contents at GMM SAP	106
10.3.1	PAGING PS	106
10.3.2	PAGING CS	108
10.3.3	RA-CAPABILITY-UPDATE	108
10.3.4	RA-CAPABILITY-UPDATE-ACK	109
10.3.5	RADIO-STATUS	109
10.3.6	SUSPEND	109
10.3.7	SUSPEND-ACK	110
10.3.8	SUSPEND-NACK	110
10.3.9	RESUME	110
10.3.10	RESUME-ACK	111
10.3.11	RESUME-NACK	111
10.3.12	DUMMY PAGING PS	111
10.3.13	DUMMY PAGING PS RESPONSE	112
10.3.14	PAGING PS REJECT	112
10.3.15	MS REGISTRATION ENQUIRY	112
10.3.16	MS REGISTRATION ENQUIRY RESPONSE	112
10.4	PDU functional definitions and contents at NM SAP	113
10.4.1	FLUSH-LL	113
10.4.2	FLUSH-LL-ACK	113
10.4.3	LLC-DISCARDED	114
10.4.4	FLOW-CONTROL-BVC	114
10.4.5	FLOW-CONTROL-BVC-ACK	114
10.4.6	FLOW-CONTROL-MS	115
10.4.7	FLOW-CONTROL-MS-ACK	115
10.4.8	BVC-BLOCK	115
10.4.9	BVC-BLOCK-ACK	116
10.4.10	BVC-UNBLOCK	116
10.4.11	BVC-UNBLOCK-ACK	116
10.4.12	BVC-RESET	117
10.4.13	BVC-RESET-ACK	117
10.4.14	STATUS	118
10.4.14.1	Static conditions for BVCI	118
10.4.15	SGSN-INVOKE-TRACE	118
10.4.16	DOWNLOAD-BSS-PFC	119
10.4.17	CREATE-BSS-PFC	119
10.4.18	CREATE-BSS-PFC-ACK	119
10.4.19	CREATE-BSS-PFC-NACK	120
10.4.20	MODIFY-BSS-PFC	120
10.4.21	MODIFY-BSS-PFC-ACK	120
10.4.22	DELETE-BSS-PFC	121
10.4.23	DELETE-BSS-PFC-ACK	121
10.4.24	FLOW-CONTROL-PFC	121
10.4.25	FLOW-CONTROL-PFC-ACK	122
10.4.26	DELETE-BSS-PFC-REQ	122
10.4.27	PS-HANDOVER-REQUIRED	122
10.4.28	PS-HANDOVER-REQUIRED-ACK	123
10.4.29	PS-HANDOVER-REQUIRED-NACK	123
10.4.30	PS-HANDOVER-REQUEST	124
10.4.31	PS-HANDOVER-REQUEST-ACK	124
10.4.32	PS-HANDOVER-REQUEST-NACK	125
10.4.33	PS-HANDOVER-COMplete	125
10.4.34	PS-HANDOVER-CANCEL	125
10.4.35	PS-HANDOVER-COMplete-ACK	126
10.5	PDU functional definitions and contents at LCS SAP	126
10.5.1	PERFORM-LOCATION-REQUEST	126
10.5.2	PERFORM-LOCATION-RESPONSE	128
10.5.3	PERFORM-LOCATION-ABORT	128
10.5.4	POSITION-COMMAND	128
10.5.5	POSITION-RESPONSE	129
10.6	PDU functional definitions and contents at RIM SAP	129
10.6.1	RAN-INFORMATION-REQUEST	129

10.6.2	RAN-INFORMATION.....	130
10.6.3	RAN-INFORMATION-ACK.....	130
10.6.4	RAN-INFORMATION-ERROR.....	130
10.6.5	RAN-INFORMATION-APPLICATION-ERROR.....	131
10.7	PDU functional definitions and contents at MBMS SAP.....	131
10.7.1	MBMS-SESSION-START-REQUEST.....	131
10.7.2	MBMS-SESSION-START-RESPONSE.....	132
10.7.3	MBMS-SESSION-STOP-REQUEST.....	132
10.7.4	MBMS-SESSION-STOP-RESPONSE.....	132
10.7.5	MBMS-SESSION-UPDATE-REQUEST.....	132
10.7.6	MBMS-SESSION-UPDATE-RESPONSE.....	133
11	General information elements coding.....	133
11.1	General structure of the information elements.....	133
11.2	Information element description.....	133
11.3	Information Element Identifier (IEI).....	134
11.3.1	Alignment octets.....	136
11.3.2	Bmax default MS.....	136
11.3.3	BSS Area Indication.....	136
11.3.4	Bucket Leak Rate (R).....	137
11.3.5	BVC Bucket Size.....	137
11.3.6	BVCI (BSSGP Virtual Connection Identifier).....	137
11.3.7	BVC Measurement.....	138
11.3.8	Cause.....	138
11.3.9	Cell Identifier.....	140
11.3.10	Channel needed.....	140
11.3.11	DRX Parameters.....	140
11.3.12	eMLPP-Priority.....	140
11.3.13	Flush Action.....	141
11.3.14	IMSI.....	141
11.3.15	LLC-PDU.....	141
11.3.16	LLC Frames Discarded.....	142
11.3.17	Location Area.....	142
11.3.18	LSA Identifier List.....	142
11.3.19	LSA Information.....	142
11.3.20	Mobile Id.....	142
11.3.21	MS Bucket Size.....	143
11.3.22	MS Radio Access Capability.....	143
11.3.23	OMC Id.....	143
11.3.24	PDU In Error.....	143
11.3.25	PDU Lifetime.....	144
11.3.26	PDU Type.....	145
11.3.27	Priority.....	146
11.3.28	QoS Profile.....	146
11.3.29	Radio Cause.....	148
11.3.30	RA-Cap-UPD-Cause.....	148
11.3.31	Routeing Area.....	149
11.3.32	R_default_MS.....	149
11.3.33	Suspend Reference Number.....	149
11.3.34	Tag.....	149
11.3.35	Temporary logical link Identity (TLLI).....	150
11.3.36	Temporary Mobile Subscriber Identity (TMSI).....	150
11.3.37	Trace Reference.....	150
11.3.38	Trace Type.....	150
11.3.39	Transaction Id.....	151
11.3.40	Trigger Id.....	151
11.3.41	Number of octets affected.....	151
11.3.42	Packet Flow Identifier (PFI).....	151
11.3.42a	(void).....	152
11.3.43	Aggregate BSS QoS Profile.....	152
11.3.44	GPRS Timer.....	152
11.3.45	Feature Bitmap.....	152

11.3.46	Bucket Full Ratio	154
11.3.47	Service UTRAN CCO	154
11.3.48	NSEI (Network Service Entity Identifier)	155
11.3.49	RRLP APDU	155
11.3.50	LCS QoS	155
11.3.51	LCS Client Type	155
11.3.52	Requested GPS Assistance Data	156
11.3.53	Location Type	156
11.3.54	Location Estimate	156
11.3.55	Positioning Data	156
11.3.56	Deciphering Keys	157
11.3.57	LCS Priority	157
11.3.58	LCS Cause	157
11.3.59	LCS Capability	157
11.3.60	RRLP Flags	157
11.3.61	RIM Application Identity	158
11.3.62	RIM Sequence Number	159
11.3.62a	RIM Container	159
11.3.62a.0	General	159
11.3.62a.1	RAN-INFORMATION-REQUEST RIM Container	159
11.3.62a.2	RAN-INFORMATION RIM Container	160
11.3.62a.3	RAN-INFORMATION-ACK RIM Container	160
11.3.62a.4	RAN-INFORMATION-ERROR RIM Container	161
11.3.62a.5	RAN-INFORMATION-APPLICATION-ERROR RIM Container	161
11.3.63	Application Container	162
11.3.63.1	RAN-INFORMATION-REQUEST Application Container	162
11.3.63.1.0	General	162
11.3.63.1.1	RAN-INFORMATION-REQUEST Application Container for the NACC Application	162
11.3.63.1.2	RAN-INFORMATION-REQUEST Application Container for the SI3 Application	162
11.3.63.1.3	RAN-INFORMATION-REQUEST Application Container for the MBMS data channel Application	162
11.3.63.1.4	RAN-INFORMATION-REQUEST Application Container for the SON Transfer Application ...	163
11.3.63.1.5	RAN-INFORMATION-REQUEST Application Container for the UTRA SI Application	163
11.3.63.2	RAN-INFORMATION Application Container Unit	164
11.3.63.2.0	General	164
11.3.63.2.1	RAN-INFORMATION Application Container for the NACC Application	164
11.3.63.2.2	RAN-INFORMATION Application Container for the SI3 Application	165
11.3.63.2.3	RAN-INFORMATION Application Container for the MBMS data channel Application	165
11.3.63.2.4	RAN-INFORMATION Application Container for the SON Transfer Application	167
11.3.63.2.5	RAN-INFORMATION Application Container for the UTRA SI Application	167
11.3.64	Application Error Container	168
11.3.64.1	Application Error Container layout for the NACC application	168
11.3.64.2	Application Error Container for the SI3 application	168
11.3.64.3	Application Error Container for the MBMS data channel application	169
11.3.64.4	Application Error Container for the SON Transfer Application	170
11.3.64.5	Application Error Container for the UTRA SI Application	170
11.3.65	RIM PDU Indications	171
11.3.65.0	General	171
11.3.65.1	RAN-INFORMATION-REQUEST RIM PDU Indications	171
11.3.65.2	RAN-INFORMATION RIM PDU Indications	171
11.3.65.3	RAN-INFORMATION-APPLICATION-ERROR RIM PDU Indications	172
11.3.66	(void)	172
11.3.67	RIM Protocol Version Number	172
11.3.68	PFC Flow Control parameters	173
11.3.69	Global CN-Id	173
11.3.70	RIM Routing Information	174
11.3.71	MBMS Session Identity	175
11.3.72	MBMS Session Duration	175
11.3.73	MBMS Service Area Identity List	176
11.3.74	MBMS Response	176
11.3.75	MBMS Routing Area List	177
11.3.76	MBMS Session Information	177

11.3.77	TMGI (Temporary Mobile Group Identity).....	178
11.3.78	MBMS Stop Cause	178
11.3.79	Source BSS to Target BSS Transparent Container.....	179
11.3.80	Target BSS to Source BSS Transparent Container.....	179
11.3.81	NAS container for PS Handover.....	180
11.3.82	PFCs to be set-up list	180
11.3.83	List of set-up PFCs	181
11.3.84	Extended Feature Bitmap.....	182
11.3.85	Source to Target Transparent Container	183
11.3.86	Target to Source Transparent Container	183
11.3.87	RNC Identifier	183
11.3.88	Page Mode	184
11.3.89	Container ID	184
11.3.90	Global TFI	184
11.3.91	IMEI.....	185
11.3.92	Time to MBMS Data Transfer.....	185
11.3.93	MBMS Session Repetition Number.....	186
11.3.94	Inter RAT Handover Info	186
11.3.95	PS Handover Command.....	186
11.3.95a	PS Handover Indications	186
11.3.95b	SI/PSI Container	187
11.3.95c	Active PFCs List.....	188
11.3.96	Velocity Data	188
11.3.97	DTM Handover Command	188
11.3.98	CS Indication	189
11.3.99	Requested GANSS Assistance Data	189
11.3.100	GANSS Location Type.....	189
11.3.101	GANSS Positioning Data.....	189
11.3.102	Flow Control Granularity.....	190
11.3.103	eNB Identifier	190
11.3.104	E-UTRAN Inter RAT Handover Info	191
11.3.105	Subscriber Profile ID for RAT/Frequency priority.....	191
11.3.106	Request for Inter-RAT Handover Info.....	191
11.3.107	Reliable Inter-RAT Handover Info.....	192
11.3.108	SON Transfer Application Identity.....	192
11.3.109	CSG Identifier.....	192
11.3.110	Tracking Area Code.....	193
11.3.111	Redirect Attempt Flag.....	193
11.3.112	Redirection Indication.....	193
11.3.113	Redirection Completed	194
11.3.114	Unconfirmed send state variable.....	195
11.3.115	IRAT Measurement Configuration	195
11.3.116	SCI.....	196
11.3.117	GGSN/P-GW location	196
11.3.118	Selected PLMN ID.....	197
11.3.119	Priority Class Indicator	197
11.3.120	Source Cell ID IE.....	197
11.3.121	IRAT Measurement Configuration (extended E-ARFCNs).....	198
11.3.122	eDRX Parameters	199
11.3.123	Time Until Next Paging Occasion	199
11.3.124	Coverage Class	200
11.3.125	Paging Attempt Information	200
11.3.126	Exception Report Flag	201
11.3.127	Old Routing Area Identification	201
11.3.128	Attach Indicator	202
11.3.129	PLMN Identity.....	202
11.3.130	MME Query.....	202
12	List of system variables.....	203
12.1	General Variables	203
12.2	Flow control variables.....	203