

ETSI TS 123 284 V10.5.0 (2013-01)



**Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
Local Call Local Switch (LCLS);
Stage 2
(3GPP TS 23.284 version 10.5.0 Release 10)**

[ETSI TS 123 284 V10.5.0 \(2013-01\)](https://standards.iteh.ai/catalog/standards/etsi/48e365c8-4a61-42dc-9a4d-7961cb46eab5/etsi-ts-123-284-v10-5-0-2013-01)

<https://standards.iteh.ai/catalog/standards/etsi/48e365c8-4a61-42dc-9a4d-7961cb46eab5/etsi-ts-123-284-v10-5-0-2013-01>



Reference

RTS/TSGC-0423284va50

Keywords

GSM,UMTS

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

<https://standards.iteh.ai>
Document Preview

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

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 2013.
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 (<http://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>.

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[ETSI TS 123 284 V10.5.0 \(2013-01\)](https://standards.iteh.ai/catalog/standards/etsi/48e365c8-4a61-42dc-9a4d-7961cb46eab5/etsi-ts-123-284-v10-5-0-2013-01)

<https://standards.iteh.ai/catalog/standards/etsi/48e365c8-4a61-42dc-9a4d-7961cb46eab5/etsi-ts-123-284-v10-5-0-2013-01>

Contents

Intellectual Property Rights	2
Foreword.....	2
Foreword.....	11
1 Scope	12
2 References	12
3 Definitions, symbols and abbreviations	13
3.1 Definitions	13
3.2 Symbols.....	13
3.3 Abbreviations	13
4 Main Concepts.....	13
4.1 General	13
4.2 LCLS Negotiation	14
4.2.1 General concept of LCLS negotiation	14
4.2.2 (void)	17
4.2.3 (void)	17
4.2.4 General concept of LCLS Configuration Preference Modification	17
4.3 LCLS Call Leg Correlation	19
4.3.1 General.....	19
4.3.2 Optional Intra-Network Call Detection.....	19
4.3.2.1 General	19
4.3.2.2 Intra-Network Call Detection within the tMSC server.....	19
4.3.2.3 Intra-Network Call Detection within the tBSS.....	20
4.3.3 Optional Intra-BSS Call Detection	20
4.3.3.1 General	20
4.3.3.2 Intra-BSS Call Detection within the tMSC server	20
4.3.3.3 Intra-BSS Call Detection within the tBSS	21
4.4 LCLS Connection Control.....	21
4.5 LCLS Status Reporting	21
4.5.1 LCLS BSS Status between BSS and Core Network	21
4.5.2 LCLS Status within the Core Network	22
4.6 User Plane when LCLS is Active	23
4.6.1 General.....	23
4.6.2 LCLS Configuration	23
5 General Circuit Switched Core Network Domain Architecture	23
6 Call Establishment.....	24
6.1 Basic Mobile Originating Call.....	24
6.1.1 Basic Mobile Originating Call with BICC based CS core network	24
6.1.1.1 General	24
6.1.1.2 Initial Addressing	24
6.1.1.3 Access Bearer Assignment.....	24
6.1.1.3.1 Assignment performed after LCLS Negotiation through Core Network.....	24
6.1.1.3.2 Assignment performed before LCLS Negotiation.....	24
6.1.1.3.3 oBSS behavior	24
6.1.1.4 Backward LCLS Negotiation	24
6.1.1.5 LCLS Through-Connection	25
6.1.1.6 LCLS Status Reporting	25
6.1.1.7 MGW/User plane	25
6.1.2 Basic Mobile Originating Call with SIP-I based CS core network.....	25
6.1.2.1 General	25
6.1.2.2 Initial Addressing	26
6.1.2.3 Access Bearer Assignment.....	26
6.1.2.4 Backward LCLS Negotiation	26

6.1.2.5	LCLS Through-Connection	26
6.1.2.6	LCLS Status Reporting	26
6.1.2.7	MGW/User plane	26
6.2	Basic Mobile Terminating Call	26
6.2.1	Basic Mobile Terminating Call with BICC based CS core network.....	26
6.2.1.1	General	26
6.2.1.2	Actions at Intermediate Nodes (including GMSC)	26
6.2.1.2.1	Initial Addressing	26
6.2.1.2.2	Backward LCLS Negotiation	27
6.2.1.2.3	Through-Connection.....	27
6.2.1.2.4	LCLS Status Reporting within CN	27
6.2.1.2.5	MGW/User plane.....	27
6.2.1.3	Actions at Terminating Call side.....	27
6.2.1.3.1	Initial Addressing	27
6.2.1.3.2	Backward LCLS Negotiation	27
6.2.1.3.3	Access Bearer Assignment	28
6.2.1.3.4	LCLS Through-Connection.....	28
6.2.1.3.5	LCLS Status Reporting.....	28
6.2.1.3.6	MGW/User plane.....	28
6.2.2	Basic Mobile Terminating Call with SIP-I based CS core network.....	28
6.2.2.1	General	28
6.2.2.2	Actions at Intermediate Nodes (including GMSC)	29
6.2.2.2.1	Initial Addressing	29
6.2.2.2.2	Backward LCLS Negotiation	29
6.2.2.2.3	Through-Connection.....	29
6.2.2.2.4	LCLS Status Reporting within CN	29
6.2.2.2.5	MGW/User plane.....	29
6.2.2.3	Actions at Terminating Call side.....	29
6.2.2.3.1	Initial Addressing	29
6.2.2.3.2	Backward LCLS Negotiation	29
6.2.2.3.3	Access Bearer Assignment	29
6.2.2.3.4	LCLS Through-Connection.....	29
6.2.2.3.5	LCLS Status Reporting.....	29
6.2.2.3.6	MGW/User plane.....	29
6.3	Basic Mobile to Mobile End to End Call Examples.....	30
6.3.1	Basic Call Establishment Connection Model for LCLS	30
6.3.2	LCLS established, Basic Call Example with BICC based CS core network, forward bearer establishment	31
6.3.3	LCLS not established, Basic Call Example with BICC based CS core network	36
6.3.4	LCLS established, Basic Call Example with SIP-I based CS core network	38
6.3.5	LCLS established, Basic Call Example with BICC based CS core network, backward bearer establishment	44
7	Call Clearing and LCLS Break/Re-establishment.....	47
7.1	Call Clearing	47
7.2	LCLS Break.....	47
7.2.1	MSC server Initiated	47
7.2.1.1	Principles.....	47
7.2.1.2	MSC server actions	48
7.2.1.3	GMSC server actions	48
7.2.1.4	BSS actions	48
7.2.2	BSS Initiated.....	49
7.2.2.1	Principles.....	49
7.2.2.2	Immediate LCLS break	49
7.2.2.2.1	BSS actions.....	49
7.2.2.2.2	MSC server actions.....	49
7.2.2.2.3	GMSC server actions.....	49
7.2.2.3	BSS Requesting LCLS Release from Core Network	49
7.2.2.3.1	BSS actions.....	49
7.2.2.3.2	MSC server actions.....	50
7.2.2.3.3	GMSC server actions.....	50
7.2.3	Intermediate Node/GMSC Server Initiated.....	50

7.2.3.1	Principles.....	50
7.2.3.2	Intermediate Node/GMSC server actions.....	50
7.2.3.3	MSC server actions	50
7.2.3.4	BSS actions	51
7.2.4	LCLS Break Example Call Flows.....	51
7.2.4.1	LCLS Break Connection Model for LCLS	51
7.2.4.2	MSC server Initiated	52
7.2.4.3	BSS Initiated, Immediate LCLS Break.....	53
7.2.4.4	BSS Initiated, LCLS Break requested from Core Network.....	54
7.2.4.5	Intermediate Node/GMSC Server Initiated.....	56
7.2.4.6	MSC server Initiated when Access Side Termination is isolated in MGW.....	58
7.3	LCLS Re-establishment	59
7.3.1	MSC server Initiated.....	59
7.3.1.1	Principles.....	59
7.3.1.2	MSC server actions	59
7.3.1.2.1	LCLS re-establishment to the network side.....	59
7.3.1.2.2	LCLS re-establishment to the BSS	59
7.3.1.2.3	LCLS Status update to the network side.....	59
7.3.1.3	GMSC server actions	59
7.3.1.4	BSS actions	60
7.3.2	BSS Initiated.....	60
7.3.3	Intermediate Node / GMSC Server Initiated.....	60
7.3.3.1	Principles.....	60
7.3.3.2	Intermediate Node / GMSC server actions.....	60
7.3.3.3	MSC server actions	60
7.3.3.4	BSS actions	61
7.3.4	LCLS Re-establishment Example Call Flows.....	61
7.3.4.1	LCLS Re-establishment Connection Model for LCLS	61
7.3.4.2	MSC server Initiated Example Call Flow	61
7.3.4.3	Intermediate Node / GMSC Server Initiated Example Call Flow	63
7.3.4.4	MSC server Initiated when Access Side Termination is isolated in MGW.....	64
8	Handover/Relocation.....	65
8.1	UMTS to UMTS.....	65
8.2	UMTS to GSM	66
8.2.1	General.....	66
8.2.2	Intra-MSC UMTS to GSM Handover.....	66
8.2.2.1	Intra-MSC UMTS to GSM Handover that establishes Local Switching.....	66
8.2.2.1.1	General	66
8.2.2.1.2	Relocation Required	66
8.2.2.1.3	Handover Request Acknowledge	66
8.2.2.1.4	Handover Complete.....	66
8.2.2.1.5	Example.....	66
8.2.2.1.5.1	Connection Model.....	66
8.2.2.1.5.2	Basic Sequence for Intra-MSC UMTS to GSM Handover that establishes Local Switching.....	69
8.2.2.2	Intra-MSC UMTS to GSM Handover that does not establish LCLS	70
8.2.3	Inter-MSC UMTS to GSM Handover.....	70
8.2.3.1	Inter-MSC UMTS to GSM Handover that establishes Local Switching.....	70
8.2.3.1.1	General	70
8.2.3.1.2	MSC-1 / MGW-1.....	70
8.2.3.1.2.1	Relocation Required.....	70
8.2.3.1.2.1	Relocation Required.....	70
8.2.3.1.2.2	Handover Request Acknowledge.....	70
8.2.3.1.2.3	Bearer establishment between MGW-1 and Target MGW	71
8.2.3.1.2.4	MGW Flow Direction Control.....	71
8.2.3.1.2.5	Relocation Command/Handover Detect	71
8.2.3.1.2.6	Handover Complete	71
8.2.3.1.3	Target MSC Server / Target MGW	71
8.2.3.1.3.1	Prepare Handover Request message and MGW selection	71
8.2.3.1.3.2	Handover Request Acknowledge.....	71
8.2.3.1.3.3	Bearer establishment towards Target BSS	71
8.2.3.1.3.4	Bearer establishment between MGW-1 and Target MGW	71

8.2.3.1.3.5	Handover Complete	71
8.2.3.1.4	Example of Inter-MSC UMTS to GSM Handover that establishes Local Switching.....	72
8.2.3.1.4.1	Connection Model.....	72
8.2.3.1.4.2	Basic Sequence for Inter-MSC UMTS to GSM Handover that establishes Local Switching....	73
8.2.3.2	Inter-MSC UMTS to GSM Handover that does not establish Local Switching.....	77
8.3	GSM to UMTS	77
8.3.1	Intra-MSC GSM to UMTS Relocation	77
8.3.1.1	General	77
8.3.1.2	Handover Required	77
8.3.1.3	Iu Relocation Request Acknowledge	77
8.3.1.4	Handover Command/Iu Relocation Detect	77
8.3.1.5	Iu Relocation Complete.....	78
8.3.1.6	Example	78
8.3.1.6.1	Connection Model	78
8.3.2	Inter-MSC GSM to UMTS Relocation	84
8.3.2.1	General	84
8.3.2.2	MSC-1 / MGW-1	84
8.3.2.2.1	Handover Required.....	84
8.3.2.2.2	Iu Relocation Request Acknowledge.....	84
8.3.2.2.3	Bearer establishment between MGW-1 and Target MGW.....	84
8.3.2.2.4	MGW Flow Direction Control	84
8.3.2.2.5	Handover Command/Iu Relocation Detect.....	84
8.3.2.2.6	Iu Relocation Complete.....	84
8.3.2.3	Target MSC Server / Target MGW.....	85
8.3.2.3.1	Prepare Handover Request message and MGW selection.....	85
8.3.2.3.2	Bearer establishment towards Target RNC	85
8.3.2.3.3	Bearer establishment between MGW-1 and Target MGW.....	85
8.3.2.4	Example of Inter-MSC GSM to UMTS Relocation.....	85
8.3.2.4.1	Connection Model	85
8.3.2.4.2	Basic Sequence for Inter-MSC handover that breaks Local Switching.....	88
8.4	GSM to GSM	92
8.4.1	Intra-MSC Inter-BSS GSM to GSM Handover	92
8.4.1.1	Intra-MSC Inter-BSS GSM to GSM Handover that breaks Local Switching.....	92
8.4.1.1.1	General	92
8.4.1.1.2	Handover Required.....	92
8.4.1.1.3	MGW Flow Direction Control	92
8.4.1.1.4	Handover Request Acknowledge	93
8.4.1.1.5	Handover Command/Handover Detect.....	93
8.4.1.1.6	Handover Complete.....	93
8.4.1.1.7	Example.....	93
8.4.1.1.7.1	Connection Model.....	93
8.4.1.1.7.2	Basic Sequence for Inter-BSS Handover that breaks Local Switching.....	96
8.4.1.2	Intra-MSC Inter-BSS GSM to GSM Handovers that establishes Local Switching.....	98
8.4.1.2.1	General	98
8.4.1.2.2	Handover Required.....	98
8.4.1.2.3	Bearer establishment towards Target BSS	98
8.4.1.2.4	MGW Flow Direction Control	98
8.4.1.2.5	Handover Request Acknowledge	98
8.4.1.2.6	Handover Command/Handover Detect.....	99
8.4.1.2.7	Handover Complete.....	99
8.4.1.2.8	Example.....	99
8.4.1.2.8.1	Connection Model.....	99
8.4.1.2.8.2	Basic Sequence for Inter-BSS Handover that establishes Local Switching.....	101
8.4.2	Inter-MSC GSM to GSM Handover	103
8.4.2.1	Inter-MSC GSM to GSM Handover that breaks Local Switching.....	103
8.4.2.1.1	General	103
8.4.2.1.2	MSC-1 / MGW-1.....	103
8.4.2.1.2.1	Handover Required.....	103
8.4.2.1.2.2	Handover Request Acknowledge.....	103
8.4.2.1.2.3	Bearer establishment between MGW-1 and Target MGW	104
8.4.2.1.2.4	MGW Flow Direction Control.....	104
8.4.2.1.2.5	Handover Command/Handover Detect	104