3GPP TSG_CN#6 **NP-99506**

ETSI SMG3 Plenary Meeting #6,

Nice, France

13th – 15th December 1999

Agenda item: **5.1.3**

Source: **(Siemens, Nokia, Ericsson, Nortel et.al.(LCS group)**

Title: **CRs to work item LCS not presented to CN1**

Introduction:

This document contains **"2"** CRs agreed by (Siemens, Nokia, Ericsson, Nortel et.al, and forwarded to **TSG_N Plenary** meeting **#6** for approval.

Tdoc	Spec	CR	Rev	CAT	Rel.	Old Ver	New Ver	Subject
	04.08	A676	4	F	R98	7.2.0	7.4.0	Add enhancements to LCS in GSM 04.08
	24.008	071	2	A	R99	3.1.0	3.2.0	Mirror R99 LCS CR to GSM 04.08

TSG CN#6
Nice, France, 13-15 December, 1999

Document -99
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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04.08	CR	A676r4	Current Version:	7.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	CN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic	X	

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: T1P1.5 **Date:** 8 Dec 1999

Subject: Add enhancements to LCS in GSM 04.08

Work item: Location Services (LCS)

Category: *(only one category shall be marked with an X)*

		Release:	
Correction		Phase 2	
Corresponds to a correction in an earlier release		Release 96	
Addition of feature		Release 97	
Functional modification of feature	X	Release 98	X
Editorial modification		Release 99	
		Release 00	

Reason for change: Modify GSM specification to accommodate Location Services function

Clauses affected: 1, 10.5.1.6, 10.5.1.7

Other specs affected:

her 3G core specifications	[ ]	→ List of CRs:
her GSM core specifications	[ ]	→ List of CRs:
test specifications	[ ]	→ List of CRs:
S test specifications	[ ]	→ List of CRs:
M specifications	[ ]	→ List of CRs:

Other comments: Note for CN#6: this CR is the same as CR A676r3 approved by CN1 on 30 Nov-3 Dec, except that portions of that CR needing approval from SMG2 have been removed (leaving only changes falling under CN)

0.1 Scope of the Technical Specification

The procedures currently described in the present document are for the call control of circuit-switched connections, session management for GPRS services, mobility management and radio resource management for circuit-switched and GPRS services.
GSM 04.10 contains functional procedures for support of supplementary services.
GSM 04.11 contains functional procedures for support of point-to-point short message services.
GSM 04.12 contains functional description of short message - cell broadcast.
GSM 04.60 contains procedures for radio link control and medium access control (RLC/MAC) of packet data physical channels.
GSM 04.71 contains functional descriptions and procedures for support of location services.

NOTE: "layer 3" includes the functions and protocols described in the present document. The terms "data link layer" and "layer 2" are used interchangeably to refer to the layer immediately below layer 3.

1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1998 document, references to GSM documents are for Release 1998 versions (version 7.x.y).

[1] GSM 01.02: "Digital cellular telecommunications system (Phase 2+); General description of a GSM Public Land Mobile Network (PLMN)".

[2] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[3] GSM 02.02: "Digital cellular telecommunications system (Phase 2+); Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN)".

[4] GSM 02.03: "Digital cellular telecommunications system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".

[5] GSM 02.09: "Digital cellular telecommunications system (Phase 2+); Security aspects".

[6] GSM 02.11: "Digital cellular telecommunications system (Phase 2+); Service accessibility".

[7] GSM 02.17: "Digital cellular telecommunications system (Phase 2+); Subscriber identity modules Functional characteristics".

[8] GSM 02.40: "Digital cellular telecommunications system (Phase 2+); Procedures for call progress indications".

[9] GSM 03.01: "Digital cellular telecommunications system (Phase 2+); Network functions".

[10] GSM 03.03: "Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification".

[11] GSM 03.13: "Digital cellular telecommunications system (Phase 2+); Discontinuous Reception (DRX) in the GSM system".

[12] GSM 03.14: "Digital cellular telecommunications system (Phase 2+); Support of Dual Tone Multi-Frequency signalling (DTMF) via the GSM system".

[12a] GSM 03.71: “Digital cellular telecommunications system (Phase 2+); Location Services; Functional description – Stage 2”.

[13] GSM 03.20: "Digital cellular telecommunications system (Phase 2+); Security related network functions".

[14] GSM 03.22: "Digital cellular telecommunications system (Phase 2+); Functions related to Mobile Station (MS) in idle mode".

[15] GSM 04.02: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) access reference configuration".

[16] GSM 04.03: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Station System (MS - BSS) interface Channel structures and access capabilities".

[17] GSM 04.04: "Digital cellular telecommunications system (Phase 2+); layer 1 General requirements".

[18] GSM 04.05: "Digital cellular telecommunications system (Phase 2+); Data Link (DL) layer General aspects".

[19] GSM 04.06: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Station System (MS - BSS) interface Data Link (DL) layer specification".

[20] GSM 04.07: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface signalling layer 3 General aspects".

[21] GSM 04.10: "Digital cellular telecommunications system ; Mobile radio interface layer 3 Supplementary services specification General aspects".

[22] GSM 04.11: "Digital cellular telecommunications system (Phase 2); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[23] GSM 04.12: "Digital cellular telecommunications system (Phase 2+); Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface".

[23a] GSM 04.71: “Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 location services specification.

[23b] GSM 04.31 “Digital cellular telecommunication system (Phse 2+);Location Services;Mobile Station (MS) – Serving Mobile Location Centre (SMLC); Radio Resource LCS Protocol (RRLP)”.

[24] GSM 04.80: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 supplementary services specification Formats and coding".

[25] GSM 04.81: "Digital cellular telecommunications system (Phase 2+); Line identification supplementary services - Stage 3".

[26] GSM 04.82: "Digital cellular telecommunications system (Phase 2+); Call Forwarding (CF) supplementary services - Stage 3".

[27] GSM 04.83: "Digital cellular telecommunications system (Phase 2+); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".

[28] GSM 04.84: "Digital cellular telecommunications system (Phase 2+); MultiParty (MPTY) supplementary services - Stage 3".

[29] GSM 04.85: "Digital cellular telecommunications system (Phase 2+); Closed User Group (CUG) supplementary services - Stage 3".

[30] GSM 04.86: "Digital cellular telecommunications system (Phase 2+); Advice of Charge (AoC) supplementary services - Stage 3".

[31] GSM 04.88: "Digital cellular telecommunications system (Phase 2+); Call Barring (CB) supplementary services - Stage 3".

[32] GSM 05.02: "Digital cellular telecommunications system (Phase 2+); Multiplexing and multiple access on the radio path".

[33] GSM 05.05: "Digital cellular telecommunications system (Phase 2+); Radio transmission and reception".

[34] GSM 05.08: "Digital cellular telecommunications system (Phase 2+); Radio subsystem link control".

[35] GSM 05.10: "Digital cellular telecommunications system (Phase 2+); Radio subsystem synchronization".

[36] GSM 07.01: "Digital cellular telecommunications system (Phase 2+); General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[37] GSM 09.02: "Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification".

[38] GSM 09.07: "Digital cellular telecommunications system (Phase 2+); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[39] GSM 11.10: "Digital cellular telecommunications system (Phase 2+); Mobile Station (MS) conformity specification".

[40] GSM 11.21: "Digital cellular telecommunications system (Phase 2); The GSM Base Station System (BSS) equipment specification".

[41] ISO/IEC 646 (1991): "Information technology - ISO 7-bit coded character set for information interchange".

[42] ISO/IEC 6429: "Information technology - Control functions for coded character sets".

[43] ISO 8348 (1987): "Information processing systems - Data communications - Network service definition".

[44] CCITT Recommendation E.163: "Numbering plan for the international telephone service".

[45] CCITT Recommendation E.164: "Numbering plan for the ISDN era".

[46] CCITT Recommendation E.212: "Identification plan for land mobile stations".

[47] ITU-T Recommendation F.69 (1993): "Plan for telex destination codes".

[48] CCITT Recommendation I.330: "ISDN numbering and addressing principles".

[49] CCITT Recommendation I.440 (1989): "ISDN user-network interface data link layer - General aspects".

[50] CCITT Recommendation I.450 (1989): "ISDN user-network interface layer 3 General aspects".

[51] ITU-T Recommendation I.500 (1993): "General structure of the ISDN interworking recommendations".

[52] CCITT Recommendation T.50: "International Alphabet No. 5".

[53] CCITT Recommendation Q.931: ISDN user-network interface layer 3 specification for basic control".

[54] CCITT Recommendation V.21: "300 bits per second duplex modem standardized for use in the general switched telephone network".

[55] CCITT Recommendation V.22: "1200 bits per second duplex modem standardized for use in the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[56] CCITT Recommendation V.22bis: "2400 bits per second duplex modem using the frequency division technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[57] CCITT Recommendation V.23: "600/1200-baud modem standardized for use in the general switched telephone network".

[58] CCITT Recommendation V.26ter: "2400 bits per second duplex modem using the echo cancellation technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[59] CCITT Recommendation V.32: "A family of 2-wire, duplex modems operating at data signalling rates of up to 9600 bit/s for use on the general switched telephone network and on leased telephone-type circuits".

[60] CCITT Recommendation V.110: "Support of data terminal equipments (DTEs) with V-Series interfaces by an integrated services digital network".

[61] CCITT Recommendation V.120: "Support by an ISDN of data terminal equipment with V-Series type interfaces with provision for statistical multiplexing".

[62] CCITT Recommendation X.21: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for synchronous operation on public data networks".

[63] CCITT Recommendation X.25: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

[64] CCITT Recommendation X.28: "DTE/DCE interface for a start-stop mode data terminal equipment accessing the packet assembly/disassembly facility (PAD) in a public data network situated in the same country".

[65] CCITT Recommendation X.30: "Support of X.21, X.21 bis and X.20 bis based data terminal equipments (DTEs) by an integrated services digital network (ISDN)".

[66] CCITT Recommendation X.31: "Support of packet mode terminal equipment by an ISDN".

[67] CCITT Recommendation X.32: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and accessing a packet switched public data network through a public switched telephone network or an integrated services digital network or a circuit switched public data network".

[68] CCITT Recommendation X.75 (1988): "Packet-switched signalling system between public networks providing data transmission services".

[69] CCITT Recommendation X.121: "International numbering plan for public data networks".

[70] ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control".

[71] ETS 300 102-2: "Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control".

[72] ISO/IEC10646: “Universal Multiple-Octet Coded Character Set (UCS)”; UCS2, 16 bit coding.

[73] GSM 02.60: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Service Description; Stage 1".

[74] GSM 03.60: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Service Description; Stage 2".

[75] GSM 03.64: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Overall description of the GPRS radio interface; Stage 2".

[76] GSM 04.60: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station - Base Station System (MS-BSS) interface; Radio Link Control and Medium Access Control (RLC/MAC) layer specification".

[77] IETF RFC 1034: "Domain names - Concepts and Facilities " (STD 7).

[78] GSM 04.65: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Subnetwork Dependent Convergence Protocol (SNDCP)".

*** NEXT MODIFIED SECTION ***

10.5.1.6 Mobile Station Classmark 2

The purpose of the *Mobile Station Classmark 2* information element is to provide the network with information concerning aspects of both high and low priority of the mobile station equipment. This affects the manner in which the network handles the operation of the mobile station. The Mobile Station Classmark information indicates general mobile station characteristics and it shall therefore, except for fields explicitly indicated, be independent of the frequency band of the channel it is sent on.
The *Mobile Station Classmark 2* information element is coded as shown in figure 10.5.6/GSM 04.08, table 10.5.6a/GSM 04.08 and table 10.5.6b/GSM 04.08.
The *Mobile Station Classmark 2* is a type 4 information element with 5 octets length.

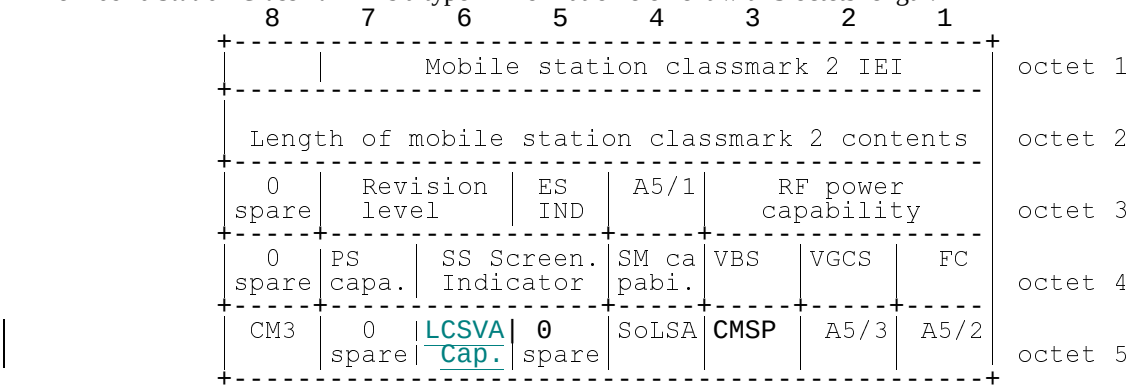

Figure 10.5.6/GSM 04.08: *Mobile Station Classmark 2* information element

NOTE: Owing to backward compatibility problems, bit 8 of octet 4 should not be used unless it is also checked that the bits 8, 7 and 6 of octet 3 are not "0 0 0".

Table 10.5.6a/GSM 04.08: *Mobile Station Classmark 2* information element

Revision level (octet 3)
Bits
7 6
0 0 Reserved for phase 1
0 1 Used by phase 2 mobile stations

All other values are reserved for future use

ES IND (octet 3, bit 5) "Controlled Early Classmark Sending" option implementation

0 "Controlled Early Classmark Sending" option is not implemented in the MS
1 "Controlled Early Classmark Sending" option is implemented in the MS

NOTE: The value of the ES IND gives the implementation in the MS. It's value is **not** dependent on the broadcast SI 3 Rest Octet <Early Classmark Sending Control> value.

A5/1 algorithm supported (octet 3, bit 4)

0 encryption algorithm A5/1 available
1 encryption algorithm A5/1 not available

RF Power Capability (Octet 3)
When GSM 900 P, E [or R] band is used (for exceptions see 3.4.18):
Bits
3 2 1
0 0 0 class 1
0 0 1 class 2
0 1 0 class 3
0 1 1 class 4
1 0 0 class 5

All other values are reserved.

When the DCS 1800 or PCS 1900 band is used (for exceptions see 3.4.18):
Bits
3 2 1
0 0 0 class 1
0 0 1 class 2
0 1 0 class 3

All other values are reserved.

PS capability (pseudo-synchronization capability) (octet 4)
Bit **7**
0 PS capability not present
1 PS capability present

SS Screening Indicator (octet 4)
Bits
6 5
0 0 defined in GSM 04.80
0 1 defined in GSM 04.80
1 0 defined in GSM 04.80
1 1 defined in GSM 04.80

SM capability (MT SMS pt to pt capability) (octet 4)
Bit **4**
0 Mobile station does not support mobile terminated point to point SMS
1 Mobile station supports mobile terminated point to point SMS

Table 10.5.6b/GSM 04.08: *Mobile Station Classmark 2* information element

VBS notification reception (octet 4)
Bit **3**
0 no VBS capability or no notifications wanted
1 VBS capability and notifications wanted

VGCS notification reception (octet 4)
Bit **2**
0 no VGCS capability or no notifications wanted
1 VGCS capability and notifications wanted

FC Frequency Capability (octet 4)
When a GSM 900 band is used (for exceptions see 3.4.18):
Bit **1**
0 The MS does not support the E-GSM or R-GSM band (For definition of frequency bands see GSM 05.05)

1 The MS does support the E-GSM or R-GSM (For definition of frequency bands see GSM 05.05)
Note : For mobile station supporting the R-GSM band further information can be found in MS Classmark 3.

When the DCS 1800 band is used (for exceptions see 3.4.18):
Bit **1**
0 Reserved for future use (for definition of frequency bands see GSM 05.05)

Note: This bit conveys no information about support or non support of the E-GSM or R-GSM band when transmitted on a DCS 1800 channel.

CM3 (octet 5, bit 8)
0 The MS does not support any options that are indicated in CM3
1 The MS supports options that are indicated in classmark 3 IE

LCS VA capability (LCS value added location request notification capability) (octet 5,bit 6)

0 LCS value added location request notification capability not supported
1 LCS value added location request notification capability supported

SoLSA (octet 5, bit 4**)**
0 The ME does not support SoLSA.
1 The ME supports SoLSA.

CMSP: CM Service Prompt (octet 5, bit 3) $(CCBS)$
0 “Network initiated MO CM connection request” not supported.
1 “Network initiated MO CM connection request” supported for at least one CM protocol.

A5/3 algorithm supported (octet 5, bit 2)
0 encryption algorithm A5/3 not available
1 encryption algorithm A5/3 available

A5/2 algorithm supported (octet 5, bit 1)
0 encryption algorithm A5/2 not available
1 encryption algorithm A5/2 available

NOTE: Additional mobile station capability information might be obtained by invoking the classmark interrogation procedure.

10.5.1.7 Mobile Station Classmark 3

The purpose of the *Mobile Station Classmark 3* information element is to provide the network with information concerning aspects of the mobile station. The contents might affect the manner in which the network handles the operation of the mobile station. The Mobile Station Classmark information indicates general mobile station characteristics and it shall therefore, except for fields explicitly indicated, be independent of the frequency band of the channel it is sent on.
The *MS Classmark 3* is a type 4 information element with a maximum of 14 octets length.
The value part of a *MS Classmark 3* information element is coded as shown in figure 10.5.7/GSM 04.08 and table 10.5.7/GSM 04.08.

NOTE: The 14 octet limit is so that the CLASSMARK CHANGE message will fit in one layer 2 frame.

SEMANTIC RULE : a multiband mobile station shall provide information about all frequency bands it can support. A single band mobile station shall not indicate the band it supports in the *Multiband Supported* field in the MS Classmark 3.

SEMANTIC RULE : a mobile station shall include the MS Measurement Capability field if the *Multi Slot Class* field contains a value of 19 or greater (see GSM 05.02).
Typically, the number of spare bits at the end is the minimum to reach an octet boundary. The receiver may add any number of bits set to "0" at the end of the received string if needed for correct decoding.

<Classmark 3 Value part> ::=
<spare bit>
{ <Multiband supported : {000}>
<A5 bits> |
<Multiband supported : { 101 | 110}>
<A5 bits>
<Associated Radio Capability 2 : bit(4)>
<Associated Radio Capability 1 : bit(4)> |
<Multiband supported : {001 | 010 | 100 }>
<A5 bits>
<spare bit>(4)
<Associated Radio Capability 1 : bit(4)> }
{ 0 | 1 <R Support> }
{ 0 | 1 <Multi Slot Capability>}
<UCS2 treatment: bit>
<Extended Measurement Capability : bit>
{ 0 | 1 <MS measurement capability> }
{ 0 | 1 <MS Positioning Method Capability> }
<spare bit>;

<A5 bits> ::= <A5/7 : bit> <A5/6 : bit> <A5/5 : bit> <A5/4 : bit> ;

<R Support>::=
< R-GSM band Associated Radio Capability : bit(3)>;

<Multi Slot Capability> ::=
<Multi Slot Class : bit(5)> ;

< MS Measurement capability > ::=
< SMS_VALUE : bit (4) >
< SM_VALUE : bit (4) >;

< MS Positioning Method Capability > ::=
< MS Positioning Method : bit(5)>;

Figure 10.5.7/GSM 04.08: *Mobile Station Classmark 3* information element

Table 10.5.7/GSM 04.08: *Mobile Station Classmark 3* information element

Multiband Supported (3 bit field)

Band 1 supported (third bit of the field)
0 P-GSM not supported
1 P-GSM supported

Band 2 supported (second bit of the field)
0 E-GSM or R-GSM not supported
1 E-GSM or R-GSM supported

Band 3 supported (first bit of the field)
0 DCS 1800 not supported
1 DCS 1800 supported

The indication of support of P-GSM band or E-GSM or R-GSM band is mutually exclusive.

When the 'Band 2 supported' bit indicates support of E-GSM or R-GSM, the presence of the <R Support> field, see below, indicates if the E-GSM or R-GSM band is supported.

In this version of the protocol, the sender indicates in this field either none or two of these 3 bands supported. However, if only one band is indicated, the receiver shall ignore the Associated Radio Capability 2.

For single band mobile station all bits are set to 0.

A5/4
0 encryption algorithm A5/4 not available
1 encryption algorithm A5/4 available

A5/5
0 encryption algorithm A5/5 not available
1 encryption algorithm A5/5 available

A5/6
0 encryption algorithm A5/6 not available
1 encryption algorithm A5/6 available

A5/7
0 encryption algorithm A5/7 not available
1 encryption algorithm A5/7 available

Associated Radio capability 1 and 2

If either of P-GSM or E-GSM or R-GSM is supported, the radio capability 1 field indicates the radio capability for P-GSM, E-GSM or R-GSM, and the radio capability 2 field indicates the radio capability for DCS1800 if supported, and is spare otherwise.

If none of P-GSM or E-GSM or R-GSM are supported, the radio capability 1 field indicates the radio capability for DCS1800, and the radio capability 2 field is spare.

The radio capability contains the binary coding of the power class associated with the band indicated in multiband support bits (see GSMß05.05).

R Support

In case where the R-GSM band is supported the R-GSM band assciated radio capability field contains the binary coding of the power class associated(see GSMß05.05). A mobile station supporting the R-GSM band shall also when appropriate, see 10.5.1.6, indicate its support in the 'FC' bit in the Mobile Station Classmark 2 information element.

Note: the coding of the power class for P-GSM, E-GSM, R-GSM and DCS 1800 in radio capability 1 and/or 2 is different to that used in the Mobile Station Classmark 1 and Mobile Station Classmark 2 information elements.

(continued...)

Table 10.5.1.7/GSM 04.08 (continued): *MS Classmark 3* information element

Multi Slot Class (5 bit field)

In case the MS supports the use of multiple timeslots then the Multi Slot Class field is coded as the binary representation of the multislot class defined in TS GSM 05.02.

UCS2 treatment

This information field indicates the likely treatment by the mobile station of UCS2 encoded character strings. If not included, the value 0 shall be assumed by the receiver.

0 the ME has a preference for the default alphabet (defined in GSM 03.38) over UCS2.

1 the ME has no preference between the use of the default alphabet and the use of UCS2.

Extended Measurement Capability

This bit indicates whether the mobile station supports 'Extended Measurements' or not

0 the MS does not support Extended Measurements

1 the MS supports Extended Measurements

SMS_VALUE (Switch-Measure-Switch) (4 bit field)
The SMS field indicates the time needed for the mobile station to switch from one radio channel to another, perform a neighbour cell power measurement, and the switch from that radio channel to another radio channel.
Bits
4 3 2 1
0 0 0 0 1/4 timeslot (~144 microseconds)
0 0 0 1 2/4 timeslot (~288 microseconds)
0 0 1 0 3/4 timeslot (~433 microseconds)
. . .
1 1 1 1 16/4 timeslot (~2307 microseconds)
SM_VALUE (Switch-Measure) (4 bit field)
The SM field indicates the time needed for the mobile station to switch from one radio channel to another and perform a neighbour cell power measurement.
Bits
4 3 2 1
0 0 0 0 1/4 timeslot (~144 microseconds)
0 0 0 1 2/4 timeslot (~288 microseconds)
0 0 1 0 3/4 timeslot (~433 microseconds)
. . .
1 1 1 1 16/4 timeslot (~2307 microseconds)

MS Positioning Method Capability
This bit indicates whether the MS supports Positioning Method or not for the provision of Location Services.

MS Positioning Method (5 bit field)
This field indicates the Positioning Method(s) supported by the mobile station.
MS assisted E-OTD
Bit 5
0: MS assisted E-OTD not supported
1: MS assisted E-OTD supported

MS based E-OTD
Bit 4

0: MS based E-OTD not supported
1: MS based E-OTD supported

MS assisted GPS
Bit 3
0: MS assisted GPS not supported
1: MS assisted GPS supported

MS based GPS
Bit 2
0: MS based GPS not supported
1: MS based GPS supported

MS conventional GPS
Bit 1
0: conventional GPS not supported
1: conventional GPS supported

TSG CN#6

Nice, France, 13-15 December, 1999

Document -99

e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx
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CHANGE REQUEST

24.008	CR	071r2	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	CN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic	X	

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	X

Source: Ericsson, Nokia on behalf of T1P1.5 **Date:** 8 Dec 1999

Subject: Mirror R99 LCS CR to GSM 04.08

Work item: Location Services (LCS)

Category: *(only one category shall be marked with an X)*			**Release:**	
	Correction			Phase 2	
	Corresponds to a correction in an earlier release	X		Release 96	
	Addition of feature			Release 97	
	Functional modification of feature			Release 98	
	Editorial modification			Release 99	X
				Release 00	

Reason for change: Modify GSM specification to accommodate Location Services function

Clauses affected: 2, 10.5.1.6, 10.5.1.7

Other specs affected:			
her 3G core specifications		→ List of CRs:	
her GSM core specifications		→ List of CRs:	
test specifications		→ List of CRs:	
S test specifications		→ List of CRs:	
M specifications		→ List of CRs:	

Other comments: Note for CN#6: this CR is the same as CR 071r1 approved by CN1 on 30 Nov-3 Dec, except that portions of that CR needing approval from SMG2 have been removed (those portions concerned the definition of new RR level parameters).

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] GSM 01.02: "Digital cellular telecommunications system (Phase 2+); General description of a GSM Public Land Mobile Network (PLMN)".

[2] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[3] TS 22.002: "Digital cellular telecommunications system (Phase 2+); Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN)".

[4] GSM 02.03: "Digital cellular telecommunications system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".

[5] GSM 02.09: "Digital cellular telecommunications system (Phase 2+); Security aspects".

[6] TS 22.011: "Digital cellular telecommunications system (Phase 2+); Service accessibility".

[7] GSM 02.17: "Digital cellular telecommunications system (Phase 2+); Subscriber identity modules Functional characteristics".

[8] GSM 02.40: "Digital cellular telecommunications system (Phase 2+); Procedures for call progress indications".

[9] GSM 03.01: "Digital cellular telecommunications system (Phase 2+); Network functions".

[10] TS 23.003: "Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification".

[11] GSM 03.13: "Digital cellular telecommunications system (Phase 2+); Discontinuous Reception (DRX) in the GSM system".

[12] TS 23.014: "Digital cellular telecommunications system (Phase 2+); Support of Dual Tone Multi-Frequency signalling (DTMF) via the GSM system".

[12a] TS 23.071: “Digital cellular telecommunications system (Phase 2+); Location Services; Functional description – Stage 2”.

[13] GSM 03.20: "Digital cellular telecommunications system (Phase 2+); Security related network functions".

[14] TS 23.022: "Digital cellular telecommunications system (Phase 2+); Functions related to Mobile Station (MS) in idle mode".

[15] GSM 04.02: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) access reference configuration".

[16] GSM 04.03: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Station System (MS - BSS) interface Channel structures and access capabilities".

[17] GSM 04.04: "Digital cellular telecommunications system (Phase 2+); layer 1 General requirements".

[18] GSM 04.05: "Digital cellular telecommunications system (Phase 2+); Data Link (DL) layer General aspects".

[19] GSM 04.06: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Station System (MS - BSS) interface Data Link (DL) layer specification".

[20] TS 24.007: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface signalling layer 3 General aspects".

[21] TS 24.010: "Digital cellular telecommunications system ; Mobile radio interface layer 3 Supplementary services specification General aspects".

[22] GSM 04.11: "Digital cellular telecommunications system (Phase 2); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[23] GSM 04.12: "Digital cellular telecommunications system (Phase 2+); Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface".

[23a] TS 24.071: “Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 location services specification.

[23b] GSM 04.31 “Digital cellular telecommunication system (Phse 2+);Location Services;Mobile Station (MS) – Serving Mobile Location Centre (SMLC); Radio Resource LCS Protocol (RRLP)”.

[24] TS 24.080: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 supplementary services specification Formats and coding".

[25] TS 24.081: "Digital cellular telecommunications system (Phase 2+); Line identification supplementary services - Stage 3".

[26] TS 24.082: "Digital cellular telecommunications system (Phase 2+); Call Forwarding (CF) supplementary services - Stage 3".

[27] TS 24.083: "Digital cellular telecommunications system (Phase 2+); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".

[28] TS 24.084: "Digital cellular telecommunications system (Phase 2+); MultiParty (MPTY) supplementary services - Stage 3".

[29] TS 24.085: "Digital cellular telecommunications system (Phase 2+); Closed User Group (CUG) supplementary services - Stage 3".

[30] TS 24.086: "Digital cellular telecommunications system (Phase 2+); Advice of Charge (AoC) supplementary services - Stage 3".

[31] GSM 04.88: "Digital cellular telecommunications system (Phase 2+); Call Barring (CB) supplementary services - Stage 3".

[32] GSM 05.02: "Digital cellular telecommunications system (Phase 2+); Multiplexing and multiple access on the radio path".

[33] GSM 05.05: "Digital cellular telecommunications system (Phase 2+); Radio transmission and reception".

[34] GSM 05.08: "Digital cellular telecommunications system (Phase 2+); Radio subsystem link control".

[35] GSM 05.10: "Digital cellular telecommunications system (Phase 2+); Radio subsystem synchronization".

[36] TS 27.001TS 27.001: "Digital cellular telecommunications system (Phase 2+); General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[37] TS 29.002: "Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification".

[38] TS 29.007: "Digital cellular telecommunications system (Phase 2+); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[39] GSM 11.10: "Digital cellular telecommunications system (Phase 2+); Mobile Station (MS) conformity specification".

[40] GSM 11.21: "Digital cellular telecommunications system (Phase 2); The GSM Base Station System (BSS) equipment specification".

[41] ISO/IEC 646 (1991): "Information technology - ISO 7-bit coded character set for information interchange".

[42] ISO/IEC 6429: "Information technology - Control functions for coded character sets".

[43] ISO 8348 (1987): "Information processing systems - Data communications - Network service definition".

[44] CCITT Recommendation E.163: "Numbering plan for the international telephone service".

[45] CCITT Recommendation E.164: "Numbering plan for the ISDN era".

[46] CCITT Recommendation E.212: "Identification plan for land mobile stations".

[47] ITU-T Recommendation F.69 (1993): "Plan for telex destination codes".

[48] CCITT Recommendation I.330: "ISDN numbering and addressing principles".

[49] CCITT Recommendation I.440 (1989): "ISDN user-network interface data link layer - General aspects".

[50] CCITT Recommendation I.450 (1989): "ISDN user-network interface layer 3 General aspects".

[51] ITU-T Recommendation I.500 (1993): "General structure of the ISDN interworking recommendations".

[52] CCITT Recommendation T.50: "International Alphabet No. 5".

[53] CCITT Recommendation Q.931: ISDN user-network interface layer 3 specification for basic control".

[54] CCITT Recommendation V.21: "300 bits per second duplex modem standardized for use in the general switched telephone network".

[55] CCITT Recommendation V.22: "1200 bits per second duplex modem standardized for use in the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[56] CCITT Recommendation V.22bis: "2400 bits per second duplex modem using the frequency division technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[57] CCITT Recommendation V.23: "600/1200-baud modem standardized for use in the general switched telephone network".

[58] CCITT Recommendation V.26ter: "2400 bits per second duplex modem using the echo cancellation technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[59] CCITT Recommendation V.32: "A family of 2-wire, duplex modems operating at data signalling rates of up to 9600 bit/s for use on the general switched telephone network and on leased telephone-type circuits".

[60] CCITT Recommendation V.110: "Support of data terminal equipments (DTEs) with V-Series interfaces by an integrated services digital network".

[61] CCITT Recommendation V.120: "Support by an ISDN of data terminal equipment with V-Series type interfaces with provision for statistical multiplexing".

[62] CCITT Recommendation X.21: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for synchronous operation on public data networks".

[63] CCITT Recommendation X.25: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

[64] CCITT Recommendation X.28: "DTE/DCE interface for a start-stop mode data terminal equipment accessing the packet assembly/disassembly facility (PAD) in a public data network situated in the same country".

[65] CCITT Recommendation X.30: "Support of X.21, X.21 bis and X.20 bis based data terminal equipments (DTEs) by an integrated services digital network (ISDN)".

[66] CCITT Recommendation X.31: "Support of packet mode terminal equipment by an ISDN".

[67] CCITT Recommendation X.32: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and accessing a packet switched public data network through a public switched telephone network or an integrated services digital network or a circuit switched public data network".

[68] CCITT Recommendation X.75 (1988): "Packet-switched signalling system between public networks providing data transmission services".

[69] CCITT Recommendation X.121: "International numbering plan for public data networks".

[70] ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control".

[71] ETS 300 102-2: "Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control".

[72] ISO/IEC10646: “Universal Multiple-Octet Coded Character Set (UCS)”; UCS2, 16 bit coding.

[73] TS 22.060: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Service Description; Stage 1".

[74] TS 23.060: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Service Description; Stage 2".

[75] GSM 03.64: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Overall description of the GPRS radio interface; Stage 2".

[76] GSM 04.60: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station - Base Station System (MS-BSS) interface; Radio Link Control and Medium Access Control (RLC/MAC) layer specification".

[77] IETF RFC 1034: "Domain names - Concepts and Facilities " (STD 7).

[78] GSM 04.65: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Subnetwork Dependent Convergence Protocol (SNDCP)".

*** NEXT MODIFIED SECTION ***

10.5.1.6 Mobile Station Classmark 2

The purpose of the *Mobile Station Classmark 2* information element is to provide the network with information concerning aspects of both high and low priority of the mobile station equipment. This affects the manner in which the network handles the operation of the mobile station. The Mobile Station Classmark information indicates general mobile station characteristics and it shall therefore, except for fields explicitly indicated, be independent of the frequency band of the channel it is sent on.
The *Mobile Station Classmark 2* information element is coded as shown in figure 10.5.6/TS 24.008, table 10.5.6a/TS 24.008 and table 10.5.6b/TS 24.008.
The *Mobile Station Classmark 2* is a type 4 information element with 5 octets length.

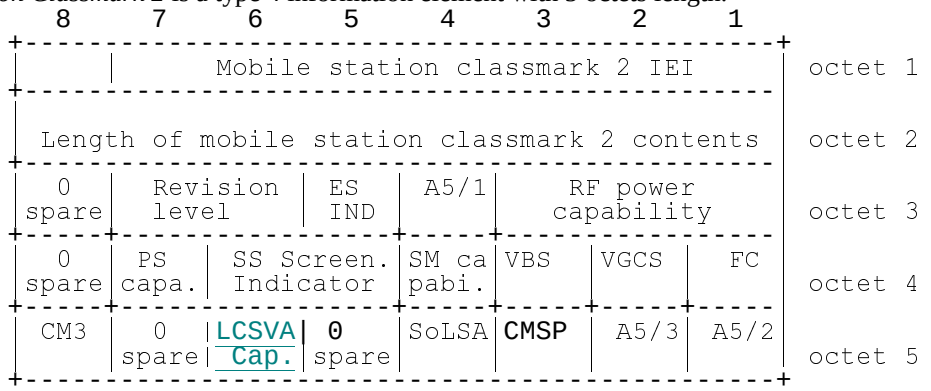

Figure 10.5.6/TS 24.008 *Mobile Station Classmark 2* information element

NOTE: Owing to backward compatibility problems, bit 8 of octet 4 should not be used unless it is also checked that the bits 8, 7 and 6 of octet 3 are not "0 0 0".

Table 10.5.6a/TS 24.008: *Mobile Station Classmark 2* information element

Revision level (octet 3)
Bits
7 6
0 0 Reserved for phase 1
0 1 Used by phase 2 mobile stations

All other values are reserved for future use

ES IND (octet 3, bit 5) "Controlled Early Classmark Sending" option implementation

0 "Controlled Early Classmark Sending" option is not implemented in the MS
1 "Controlled Early Classmark Sending" option is implemented in the MS

NOTE: The value of the ES IND gives the implementation in the MS. It's value is **not** dependent on the broadcast SI 3 Rest Octet <Early Classmark Sending Control> value.

A5/1 algorithm supported (octet 3, bit 4)

0 encryption algorithm A5/1 available
1 encryption algorithm A5/1 not available

RF Power Capability (Octet 3)
When GSM 450, GSM 480, GSM 900 P, E [or R] band is used (for exceptions see 3.4.18):
Bits
3 2 1
0 0 0 class 1
0 0 1 class 2
0 1 0 class 3
0 1 1 class 4
1 0 0 class 5

All other values are reserved.

When the DCS 1800 or PCS 1900 band is used (for exceptions see 3.4.18):
Bits
3 2 1
0 0 0 class 1
0 0 1 class 2
0 1 0 class 3

All other values are reserved.

PS capability (pseudo-synchronization capability) (octet 4)
Bit **7**
0 PS capability not present
1 PS capability present

SS Screening Indicator (octet 4)
Bits
6 5
0 0 defined in TS 24.080
0 1 defined in TS 24.080
1 0 defined in TS 24.080
1 1 defined in TS 24.080

SM capability (MT SMS pt to pt capability) (octet 4)
Bit **4**
0 Mobile station does not support mobile terminated point to point SMS
1 Mobile station supports mobile terminated point to point SMS

Table 10.5.6b/TS 24.008: *Mobile Station Classmark 2* information element

VBS notification reception (octet 4)
Bit **3**
0 no VBS capability or no notifications wanted
1 VBS capability and notifications wanted

VGCS notification reception (octet 4)
Bit **2**
0 no VGCS capability or no notifications wanted
1 VGCS capability and notifications wanted

FC Frequency Capability (octet 4)
When GSM 400 band is used (for exceptions see 3.4.18):
Bit **1**
0 Reserved for future use (for definition of frequency bands see GSM 05.05)

Note: This bit conveys no information about support or non support of the E-GSM or R-GSM band when transmitted on a GSM 400 channel.

When a GSM 900 band is used (for exceptions see 3.4.18):
Bit **1**
0 The MS does not support the E-GSM or R-GSM band (For definition of frequency bands see GSM 05.05)

1 The MS does support the E-GSM or R-GSM (For definition of frequency bands see GSM 05.05)
Note : For mobile station supporting the R-GSM band further information can be found in MS Classmark 3.

When the DCS 1800 band is used (for exceptions see 3.4.18):
Bit **1**
0 Reserved for future use (for definition of frequency bands see GSM 05.05)

Note: This bit conveys no information about support or non support of the E-GSM or R-GSM band when transmitted on a DCS 1800 channel.

CM3 (octet 5, bit 8)
0 The MS does not support any options that are indicated in CM3
1 The MS supports options that are indicated in classmark 3 IE
LCS VA capability (LCS value added location request notification capability) (octet 5,bit 6)

0 LCS value added location request notification capability not supported
1 LCS value added location request notification capability supported

SoLSA (octet 5, bit 4**)**
0 The ME does not support SoLSA.
1 The ME supports SoLSA.

CMSP: CM Service Prompt (octet 5, bit 3) $(CCBS)$
0 “Network initiated MO CM connection request” not supported.
1 “Network initiated MO CM connection request” supported for at least one CM protocol.

A5/3 algorithm supported (octet 5, bit 2)
0 encryption algorithm A5/3 not available
1 encryption algorithm A5/3 available

A5/2 algorithm supported (octet 5, bit 1)
0 encryption algorithm A5/2 not available
1 encryption algorithm A5/2 available

NOTE: Additional mobile station capability information might be obtained by invoking the classmark interrogation procedure.

10.5.1.7 Mobile Station Classmark 3

The purpose of the *Mobile Station Classmark 3* information element is to provide the network with information concerning aspects of the mobile station. The contents might affect the manner in which the network handles the operation of the mobile station. The Mobile Station Classmark information indicates general mobile station characteristics and it shall therefore, except for fields explicitly indicated, be independent of the frequency band of the channel it is sent on.
The *MS Classmark 3* is a type 4 information element with a maximum of 14 octets length.
The value part of a *MS Classmark 3* information element is coded as shown in figure 10.5.7/TS 24.008 and table 10.5.7/TS 24.008.

NOTE: The 14 octet limit is so that the CLASSMARK CHANGE message will fit in one layer 2 frame.

SEMANTIC RULE : a multiband mobile station shall provide information about all frequency bands it can support. A single band mobile station shall not indicate the band it supports in the *Multiband Supported* field in the MS Classmark 3.
SEMANTIC RULE : a mobile station shall include the MS Measurement Capability field if the *Multi Slot Class* field contains a value of 19 or greater (see GSM 05.02).
Typically, the number of spare bits at the end is the minimum to reach an octet boundary. The receiver may add any number of bits set to "0" at the end of the received string if needed for correct decoding.

<**Classmark 3 Value part**> ::=
<spare bit>
{ <Multiband supported : {000}>
<A5 bits> |
<Multiband supported : { 101 | 110}>
<A5 bits>
<**Associated Radio Capability 2** : bit(4)>
<**Associated Radio Capability 1** : bit(4)> |
<Multiband supported : {001 | 010 | 100 }>
<A5 bits>
<spare bit>(4)
<**Associated Radio Capability 1** : bit(4)> }
{ 0 | 1 <R Support> }
{ 0 | 1 <Multi Slot Capability>}
<**UCS2 treatment**: bit>
<Extended Measurement Capability : bit>
{ 0 | 1 <MS measurement capability> }
{ 0 | 1 <MS Positioning Method Capability> }
{ 0 | 1 <EDGE Multi Slot Capability>}
{0 | 1 <EDGE Struct>}
<Additional Bands Supported : bit(4)>
<**Associated Radio Capability 3** : bit(4)>
<spare bit>(4)
<spare bit>;

<A5 bits> ::= <**A5/7** : bit> <**A5/6** : bit> <**A5/5** : bit> <**A5/4** : bit> ;

<R Support>::=
< **R-GSM band Associated Radio Capability** : bit(3)>;

<Multi Slot Capability> ::=
<**Multi Slot Class** : bit(5)> ;

< MS Measurement capability > ::=
< **SMS_VALUE** : bit (4) >
< **SM_VALUE** : bit (4) >;
< MS Positioning Method Capability > ::=
< MS Positioning Method : bit(5)>;

<EDGE Multi Slot Capability> ::=
<EDGE Multi Slot Class : bit(5)>;
<EDGE Struct> : :=
<Modulation Capability : bit>
{ 0 | 1 <**EDGE RF Power Capability 1**: bit(2)>}
{ 0 | 1 <**EDGE RF Power Capability 2**: bit(2)>}

Figure 10.5.7/TS 24.008 *Mobile Station Classmark 3* information element

Table 10.5.7/TS 24.008: *Mobile Station Classmark 3* information element

```
Multiband Supported (3 bit field)

Band 1 supported (third bit of the field)
  0         P-GSM not supported
  1         P-GSM supported

Band 2 supported (second bit of the field)
  0         E-GSM or R-GSM not supported
  1         E-GSM or R-GSM supported

Band 3 supported (first bit of the field)
  0         DCS 1800 not supported
  1         DCS 1800 supported

The indication of support of P-GSM band or E-GSM or R-GSM band is
mutually exclusive.

When the 'Band 2 supported' bit indicates support of E-GSM or R-GSM,
the presence of the  <R Support> field, see below, indicates if the E-
GSM or R-GSM band is supported.

In this version of the protocol, the sender indicates in this field
either none, one or two of these 3 bands supported. If only one band is
indicated, the receiver shall ignore the Associated Radio Capability 2.

For single band mobile station all bits are set to 0.

A5/4
  0     encryption algorithm A5/4 not available
  1     encryption algorithm A5/4 available

A5/5
  0     encryption algorithm A5/5 not available
  1     encryption algorithm A5/5 available

A5/6
  0     encryption algorithm A5/6 not available
  1     encryption algorithm A5/6 available

A5/7
  0     encryption algorithm A5/7 not available
  1     encryption algorithm A5/7 available

Associated Radio capability 1 and 2

If either of P-GSM or E-GSM or R-GSM is supported, the radio capability
1 field indicates the radio capability for P-GSM, E-GSM or R-GSM, and
the radio capability 2 field indicates the radio capability for DCS1800
if supported, and is spare otherwise.

If none of P-GSM or E-GSM or R-GSM are supported, the radio capability
1 field indicates the radio capability for DCS1800, and the radio
capability 2 field is spare.

The radio capability contains the binary coding of the power class
associated with the band indicated in multiband support bits (see
GSMß05.05).

R Support

In case where the R-GSM band is supported the R-GSM band assciated
radio capability field contains the binary coding of the power class
associated(see GSMß05.05). A mobile station supporting the R-GSM band
shall also when appropriate, see 10.5.1.6, indicate its support in the
'FC' bit in the Mobile Station Classmark 2 information element.
```

Note: the coding of the power class for P-GSM, E-GSM, R-GSM and DCS 1800 in radio capability 1 and/or 2 is different to that used in the Mobile Station Classmark 1 and Mobile Station Classmark 2 information elements.

(continued...)

Table 10.5.1.7/TS 24.008 (continued): *MS Classmark 3* information element

Multi Slot Class (5 bit field)

In case the MS supports the use of multiple timeslots then the Multi Slot Class field is coded as the binary representation of the multislot class defined in TS GSM 05.02.

UCS2 treatment

This information field indicates the likely treatment by the mobile station of UCS2 encoded character strings. If not included, the value 0 shall be assumed by the receiver.

0 the ME has a preference for the default alphabet (defined in GSM 03.38) over UCS2.

1 the ME has no preference between the use of the default alphabet and the use of UCS2.

Extended Measurement Capability

This bit indicates whether the mobile station supports 'Extended Measurements' or not

0 the MS does not support Extended Measurements

1 the MS supports Extended Measurements

SMS_VALUE (Switch-Measure-Switch) (4 bit field)
The SMS field indicates the time needed for the mobile station to switch from one radio channel to another, perform a neighbour cell power measurement, and the switch from that radio channel to another radio channel.
Bits
4 3 2 1
0 0 0 0 1/4 timeslot (~144 microseconds)
0 0 0 1 2/4 timeslot (~288 microseconds)
0 0 1 0 3/4 timeslot (~433 microseconds)
...
1 1 1 1 16/4 timeslot (~2307 microseconds)

SM_VALUE (Switch-Measure) (4 bit field)
The SM field indicates the time needed for the mobile station to switch from one radio channel to another and perform a neighbour cell power measurement.
Bits
4 3 2 1
0 0 0 0 1/4 timeslot (~144 microseconds)
0 0 0 1 2/4 timeslot (~288 microseconds)
0 0 1 0 3/4 timeslot (~433 microseconds)
. . . .
1 1 1 1 16/4 timeslot (~2307 microseconds)

MS Positioning Method Capability
This bit indicates whether the MS supports Positioning Method or not for the provision of Location Services.

MS Positioning Method (5 bit field)
This field indicates the Positioning Method(s) supported by the mobile station.
MS assisted E-OTD
Bit 5
0: MS assisted E-OTD not supported
1: MS assisted E-OTD supported

MS based E-OTD
Bit 4
0: MS based E-OTD not supported
1: MS based E-OTD supported

MS assisted GPS
Bit 3
0: MS assisted GPS not supported
1: MS assisted GPS supported

MS based GPS
Bit 2
0: MS based GPS not supported
1: MS based GPS supported

MS conventional GPS
Bit 1
0: conventional GPS not supported
1: conventional GPS supported

EDGE Multi Slot class (5 bit field)

In case the EDGE MS supports the use of multiple timeslots and the number of supported time slots is different from number of time slots supported for GMSK then the EDGE Multi Slot class field is included and is coded as the binary representation of the multislot class defined in TS GSM 05.02.

Modulation Capability

Modulation Capability field indicates the supported modulation scheme by MS in addition to GMSK

0 8-PSK supported for downlink reception only

1 8-PSK supported for uplink transmission and downlink reception

EDGE RF Power Capability 1 (2 bit field)

If 8-PSK is supported for both uplink and downlink, the **EDGE RF Power Capability 1** field indicates the radio capability for GSM900.

The radio capability contains the binary coding of the EDGE power class(see GSMß05.05).

EDGE RF Power Capability 2 (2 bit field)

If 8-PSK is supported for both uplink and downlink, the **EDGE RF Power Capability 2** field indicates the radio capability for DCS1800 or PCS1900 if supported, and is not included otherwise.

The radio capability contains the binary coding of the EDGE power class (see GSM 05.05).

Additional Bands Supported (4 bit field)

Band 4 supported (fourth bit of the field)
  0   GSM 450 not supported
  1   GSM 450 supported

Band 5 supported (third bit of the field)
  0   GSM 480 not supported
  1   GSM 480 supported

Other two bits in this field are reserved for future use.

In this version of the protocol, the sender indicates in this field either none, one or two of these 2 bands supported.

Associated Radio Capability 3

If either GSM 450 or GSM 480 or both is supported, the radio capability 3 field indicates the radio capability for GSM 450 and GSM 480.

The radio capability contains the binary coding of the power class associated with the band indicated in additional band support bits (see GSM 05.05).

Note: the coding of the power class for GSM 450 and GSM 480 in radio capability 3 is different to that used in the Mobile Station Classmark 1 and Mobile Station Classmark 2 information elements.