3GPP TSG_CN#6 **NP-99447**

ETSI SMG3 Plenary Meeting #6,

Nice, France

13th – 15th December 1999

Agenda item: **5.1.3**

Source: **TSG_N WG1**

Title: **CRs on Work MS Classmark**

Introduction:

This document contains **"3"** CRs agreed by **TSG_N WG1** and forwarded to **TSG_N Plenary** meeting **#6** for approval.

Tdoc	Spec	CR	Rev	CAT	Rel.	Old Ver	New Ver	Subject
N1-99F29	24.008	052	1	B	R99	3.1.0	3.2.0	Addition of MS Classmark 2 in Location Updating Request
N1-99E53	24.008	034	1	F	R99	3.1.0	3.2.0	Mobile Station Classmark 3 Clarification
N1-99D05	24.008	036	1	B	R99	3.1.0	3.2.0	Proposal of Classmark 2 for UMTS

3GPP/SMG Meeting #9
Bad Aibling, Germany, 30 Oct- 3-Dec. 1999

Document ***N1-99F29***

CHANGE REQUEST

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24.008	**CR**	**052r1**	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 *list expected approval meeting # here ↑*

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

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 [ ] Core Network [X]

Source: Fujitsu **Date:** 2 Dec, 1999

Subject: Addition of MS Classmark 2 in Location Updating Request

Work item: MS Classmark

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

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[X]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: If *MS Classmark 2* IE is not present in *Location Updating Request*, Classmark interrogation procedure, which will increase the complexity of the protocol, needs to be defined in MM to get *MS Classmark 2* in case the established RR connection is reused for terminating service.

Clauses affected: 9.2.15, K.1

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:


help.doc

<---------- double-click here for help and instructions on how to create a CR.

9.2.15 Location updating request

This message is sent by the mobile station to the network either to request update of its location file (normal updating or periodic updating) or to request IMSI attach. See table 9.2.17/TS 24.008.

Message type: LOCATION UPDATING REQUEST

Significance: dual

Direction: mobile station to network

Table 9.2.17/TS 24.008: LOCATION UPDATING REQUEST message content

IEI	Information element	Type / Reference	Presence	Format	Length
	Mobility management protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Skip Indicator	Skip Indicator 10.3.1	M	V	1/2
	Location Updating Request message type	Message type 10.4	M	V	1
	Location updating type	Location updating type 10.5.3.5	M	V	1/2
	Ciphering key sequence number	Ciphering key sequence number 10.5.1.2	M	V	1/2
	Location area identification	Location area identification 10.5.1.3	M	V	5
	Mobile station classmark	Mobile station classmark 1 10.5.1.5	M	V	1
	Mobile identity	Mobile identity 10.5.1.4	M	LV	2-9
33	Mobile station classmark for UMTS	Mobile station classmark 2 10.5.1.6	O	TLV	5

9.2.15.1 Location area identification

The location area identification stored in the SIM is used.

9.2.15.2 Mobile Station Classmark

This IE shall include for multiband MS the Classmark 1 corresponding to the frequency band in use.

9.2.15.2 Mobile Station Classmark for UMTS

This IE shall include when the mobile station is in UMTS network.

3GPP TSG-CN-WG1, Meeting #9 ***Tdoc N1-99E53***

30.Nov - 3.Dec. 1999

Bad Aibling, Germany

SMG2 WPA, Meeting #33 ***Tdoc 2-99-1838***

22-26 November 1999

Sophia Antipolis, France

Source: **SMG2**

To: **TSG-N1**

CC:

Title: **Reply to Liaison Statement on MS CM3 clarification CR**

In reply to the Liaison Statement Tdoc N1-99D07 regarding MS CM3 clarification 24.008 CR 034 in the Tdoc N1-99B91 SMG2 would like to propose few modifications to the coding introducing 24.008 CR 034 rev1 in the Tdoc 2-99-1644.

In this revision more efficient coding is used and more describing names for new bit fields is proposed. Spare bits have been removed from new bit fields. Originally these bits were reserved for forthcoming new GSM bands to define new bands and their Associated Radio Capability. However, this reservation is unnecessarily.

If TSG-N1 feel they can endorse the proposed revisions to the CR, SMG2 approve the forwarding of the revised 24.008 CR 034 rev1 in the Tdoc 2-99-1644 for TSGN plenary for approval.

SMG2 Meeting #33
Sophia Antipolis, France, 22-26 Nov 1999

Document 2-99-1644
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

24.008	CR	034 rev1	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:	TSGN#6	for approval		strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic		

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		Core Network	X

Source: Ericsson & Nokia **Date:** Nov 11, 1999

Subject: Mobile Station Classmark 3 Clarification

Work item: MS Classmark

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

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

Reason for change:

More efficient coding is used and more describing names for new bit fields is proposed.

Spare bits have been removed from new bit fields. Originally these bits were reserved for forthcoming new GSM bands to define new bands and their Associated Radio Capability. However, this reservation is unnecessary.

Clauses affected: 10.5.1.7

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

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* or *GSM 400 Bands Supported* fields 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 <EDGE Multi Slot Capability>}
{0 | 1 <EDGE Struct>}
{ 0 | 1 <GSM 400 Bands Supported : {01 | 10 | 11}>
<**GSM 400 Associated Radio Capability**: bit(4)> }
~~<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) >;
<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)

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).

GSM 400~~Additional~~ Bands Supported (2~~4~~ bit field)

Bits
2 1
0 1 GSM 480 supported, GSM 450 not supported
1 0 GSM 450 supported, GSM 480 not supported
1 1 GSM 450 supported, GSM 480 supported

~~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.~~

GSM 400 Associated Radio Capability~~ 3~~ (4 bit field)

If either GSM 450 or GSM 480 or both is supported, the GSM 400 Associated ~~r~~Radio ~~c~~Capability~~ 3~~ field indicates the radio capability for GSM 450 and/or GSM 480.

The radio capability contains the binary coding of the power class associated with the band indicated in GSM 400~~additional~~ ~~b~~Bands ~~s~~Supported bits (see GSM 05.05).

Note: the coding of the power class for GSM 450 and GSM 480 in GSM 400 Associated ~~r~~Radio ~~c~~Capability~~ 3~~ is different to that used in the Mobile Station Classmark 1 and Mobile Station Classmark 2 information elements.

3GPP TSG-CN-WG1 Meeting #8
Kobe, Japan, 25-29 October 1999

***Document* N1-99D05**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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24.008	CR	036r1	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:	TSG-CN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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		Core Network	X

Source:	Nippon Telecommunications Consulting CO., LTD.		**Date:**	25 October 1999	
Subject:	Proposal of Classmark 2 for UMTS				
Work item:	MS Classmark				

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

Reason for change:	It is requested that the existing MS Classmark 2 for GSM is to be shared with UMTS. Therefore, the existing MS Classmark 2 is to be modified considering UMTS.
Clauses affected:	

Other specs affected:				
	Other 3G core specifications		→ List of CRs:	
	Other GSM core specifications		→ List of CRs:	
	MS test specifications		→ List of CRs:	
	BSS test specifications		→ List of CRs:	
	O&M specifications		→ List of CRs:	

Other comments:	

help.doc

<--------- double-click here for help and instructions on how to create a CR.

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.

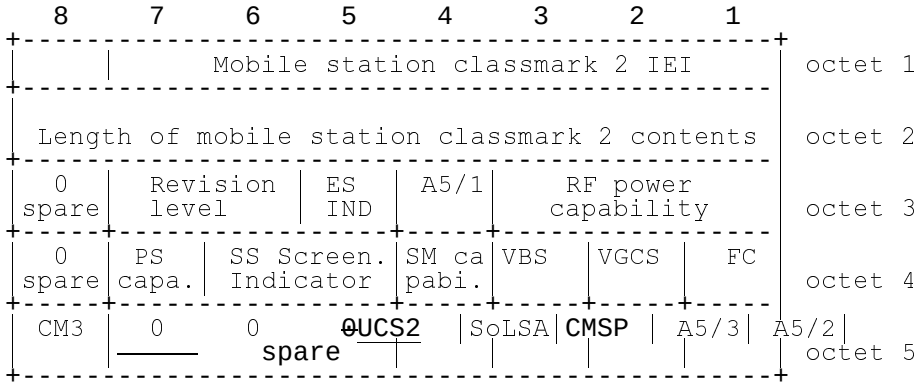

Figure 10.5.6/TS 24.008 *Mobile Station Classmark 2* information element

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
1 0 Used by UMTS mobile stations
1 1 Reserved for future use

~~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

UCS2 treatment (octet 5, bit 5)
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.

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.