3GPP TSG_CN **Tdoc NP-000446**
Plenary Meeting #9, Oahu, Hawaii
20th – 22nd September 2000.

Source: **TSG_N WG 1**

Title: **CRs to R99 Work Item MS Classmark**

Agenda item: **8.23.1**

Document for: **APPROVAL**

Introduction:

This document contains 1 CRs on R99 Work Item Ms Classmark, that has been agreed by TSG_N WG1, and is forwarded to TSG_N Plenary meeting #9 for approval.

Spec	CR	R	Doc-2nd-Level	Phase	Subject	Cat	Ver_C	Ver_N
24.008	260		N1-000968	R99	MS Classsmark 3 Tidy-up	F	3.4.1	3.5.0

3GPP-CN1 Meeting #13
Vancouver/Canada, 14-18 August 2000

Document N1-000968
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**	**260**	Current Version:	3.4.1

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

For submission to: TSG CN#9 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	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: TSGN1 **Date:** 11/08/00

Subject: MS Classmark 3 Tidy-up

Work item: MS Classmark

Category: *(only one category shall be marked with an X)*			**Release:**	
F	Correction	X	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: The DTM information in MS Classmark 3 is in the wrong part of the table, and so has been moved. The CSN.1 coding in the tables has also been edited according to the rules of CSN.1

Clauses affected: Figure 10.5.7, Table 10.5.7

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, GSM 400 Bands Supported, GSM 850 Associated Radio Capability* or PCS *1900 Associated Radio Capability* fields in the MS Classmark 3. Due to shared radio frequency channel numbers between DCS 1800 and PCS 1900, the mobile should indicate support for either DCS 1800 band OR PCS 1900 band.

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>}
        { 0 | 1 <GSM 400 Bands Supported : {01 | 10 | 11}>
                        <GSM 400 Associated Radio Capability: bit(4)> }

        {0 | 1 <GSM 850 Associated Radio Capability : bit(4)>}
        {0 | 1 <PCS 1900 Associated Radio Capability : bit(4)>}
        < UMTS FDD Radio Access Technology Capability : bit>
        < UMTS TDD Radio Access Technology Capability : bit>
        < CDMA 2000 Radio Access Technology Capability : bit>

        {0 | 1  <DTM Multi Slot Sub-Class : bit(2)>
                <MAC Mode Support : bit>
                <EGPRS Support : bit>}

                        <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)
Bit 3
0 P-GSM not supported
1 P-GSM supported

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

Band 3 supported (first bit of the field)
Bit 1
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
Bit 1
0 ~~e~~Encryption algorithm A5/4 not available
1 encryption algorithm A5/4 available

A5/5
Bit 1
0 ~~e~~Encryption algorithm A5/5 not available
1 ~~e~~Encryption algorithm A5/5 available

A5/6
Bit 1
0 ~~E~~encryption algorithm A5/6 not available
1 ~~e~~Encryption algorithm A5/6 available

A5/7
Bit 1
0 ~~E~~encryption algorithm A5/7 not available
1 ~~e~~Encryption algorithm A5/7 available

Associated Radio capability 1 and 2 (4 bit fields)

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 GSM~~ß~~05.05).

R Support

In case where the R-GSM band is supported the R-GSM band associated radio capability field contains the binary coding of the power class associated (see GSM~~ß~~ 05.05). 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 (1 bit field)

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.

Bit 1

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 (1 bit field)

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

Bit 1

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 (1 bit field)

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~~

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

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
Bit 1
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 GSM~~ß~~ 05.05).

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).
~~**DTM Multi Slot Sub-Class** (2 bit field)~~
~~This field indicates the DTM capabilities of the MS. The DTM Multi Slot Sub-Class is independent from the Multi Slot Capabilities field.~~

~~Bits~~
~~2 1~~
~~0 0 Sub-Class 1 supported~~
~~0 1 Sub-Class 5 supported~~
~~1 0 Sub-Class 9 supported~~
~~1 1 Reserved for future extension. If received, the network shall interpret this as '00'~~

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

~~**MAC Mode Support** (1 bit field)~~

~~This field indicates whether the MS supports Dynamic and Fixed Allocation or only supports Exclusive Allocation~~

~~Bits~~
~~1~~
~~0 Dynamic and Fixed Allocation not supported~~
~~1 Dynamic and Fixed allocation supported~~

~~**EGPRS Support** (1 bit field)~~
~~This field indicates whether or not the MS supports EGPRS~~

~~Bit~~
~~1~~
~~0 EGPRS not supported~~
~~1 EGPRS supported~~

GSM 400 Bands Supported (2 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

GSM 400 Associated Radio Capability (4 bit field)

If either GSM 450 or GSM 480 or both is supported, the GSM 400 Associated Radio Capability 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 Bands Supported bits (see GSM 05.05).

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

GSM 850 Associated Radio Capability (4 bit field)

This field indicates whether GSM 850 band is supported and its associated radio capability.

The radio capability contains the binary coding of the power class associated with the GSM 850 band (see GSM 05.05).

Note: the coding of the power class for GSM 850 in GSM 850 Associated Radio Capability is different to that used in the Mobile Station Classmark 1 and Mobile Station Classmark 2 information elements.

PCS 1900 Associated Radio Capability (4 bit field)

This field indicates whether PCS 1900 band is supported and its associated radio capability.

The radio capability contains the binary coding of the power class associated with the PCS 1900 band (see GSM 05.05).

Note: the coding of the power class for PCS 1900 in PCS 1900 Associated Radio Capability is different to that used in the Mobile Station Classmark 1 and Mobile Station Classmark 2 information elements.

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

UMTS FDD Radio Access Technology Capability (1 bit field)

Bit 1	
0	UMTS FDD not supported
1	UMTS FDD supported

UMTS TDD Radio Access Technology Capability (1 bit field)

Bit 1	
0	UMTS TDD not supported
1	UMTS TDD supported

CDMA 2000 Radio Access Technology Capability (1 bit field)

Bit- 1	
0	CDMA2000 not supported
1	CDMA2000 supported

DTM Multi Slot Sub-Class (2 bit field)

This field indicates the DTM capabilities of the MS. The DTM Multi Slot Sub-Class is independent from the Multi Slot Capabilities field. It is coded as follows:

Bit 2 1	
0 0	Sub-Class 1 supported
0 1	Sub-Class 5 supported
1 0	Sub-Class 9 supported
1 1	Reserved for future extension. If received, the network shall interpret this as '00'

MAC Mode Support (1 bit field)

This field indicates whether the MS supports Dynamic and Fixed Allocation or only supports Exclusive Allocation. It is coded as follows:

Bit 1	
0	Dynamic and Fixed Allocation not supported
1	Dynamic and Fixed allocation supported

EGPRS Support (1 bit field)

This field indicates whether or not the MS supports EGPRS. It is coded as follows:

Bit 1	
0	EGPRS not supported
1	EGPRS supported