3GPP TSG-GERAN Meeting #28
Brussels, Belgium, 16–20 January 2006

Tdoc ⌘GP-060235

CR-Form-v7

CHANGE REQUEST

⌘ **43.246 CR 039** ⌘ **rev** **-** ⌘ Current version: **6.6.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps ⌘ [ ] ME [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	MBMS cell reselection enhancement
Source:	⌘	Ericsson
Work item code:	⌘	TEI7 ***Date:*** ⌘ 2005-12-22
Category:	⌘	**B** ***Release:*** ⌘ Rel-7

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	In the case of MBMS feedback mode, the MS must leave the MBMS session after it has made a cell change in order to obtain a new MS_ID. This would interrupt the reception of the MBMS session and data would be lost during that period.
Summary of change:	⌘	The MS can receive the MS_ID already in the old cell.
Consequences if not approved:	⌘	The interruptions caused by cell re-selections would remain during the cell changes, thus affecting the QoS in a negative way.

Clauses affected:	⌘	6.1.1.3, 6.1.1.5, 6.2.1, 6.2.2.3 (new)

Other specs affected:

Y	N		
X		Other core specifications	⌘ 44.060
	X	Test specifications	
	X	O&M Specifications	

Other comments: ⌘

Comment [H1]: Document numbers are allocated by the Working Group Secretary.

Comment [H2]: Enter the specification number in this box. For example, 04.08 or 31.102. Do not prefix the number with anything . i.e. do not use "TS", "GSM" or "3GPP" etc.

Comment [H3]: Enter the CR number here. This number is allocated by the 3GPP sup ... [1]

Comment [H4]: Enter the revision number of the CR here. If it is the first version, use a "-".

Comment [H5]: Enter the version of the specification here. This number is the version ... [2]

Comment [H6]: For help on how to fill out a field, place the mouse pointer over the spe ... [3]

Comment [H7]: Mark one or more of the boxes with an X.

Comment [H8]: SIM / USIM / ISIM applications.

Comment [H9]: Enter a concise description of the subject matter of the CR. It should ... [4]

Comment [H10]: Enter the source of the CR. This is either (a) one or several companies c ... [5]

Comment [H11]: Enter the acronym for the work item which is applicable to the change ... [6]

Comment [H12]: Enter the date on which the CR was last revised. Format to be ... [7]

Comment [H13]: Enter a single letter corresponding to the most appropriate category ... [8]

Comment [H14]: Enter a single release code from the list below.

Comment [H15]: Enter text which explains why the change is necessary.

Comment [H16]: Enter text which describes the most important components of t ... [9]

Comment [H17]: Enter here the consequences if this CR was to be rejected. It is necess ... [10]

Comment [H18]: Enter the number of each clause which contains changes.

Comment [H19]: Tick "yes" box if any other specifications are affected by this change. ... [11]

Comment [H20]: List here the specifications which are affected or the CRs whic ... [12]

Comment [H21]: Enter any other information which may be needed by the group bein ... [13]

********** First modified section **********

6.1.1.3 Initial counting procedure

The mechanism in the requirements 11 and 12 in A.1.1 implies that an MBMS channel should not be established if no interested users are in the cell at the time of the notification of the MBMS session. The network using such a mechanism would therefore wait for at least one response from an MBMS user in each cell before assigning the MBMS bearer. The initial counting procedure can also be used to count the number of mobile stations when starting a broadcast session.

If the notification message or the (PACKET) MBMS ANNOUNCEMENT message contains the uplink resource description for an MPRACH, packet access for counting is initiated by the mobile station by sending on such MPRACH a PACKET CHANNEL REQUEST message with access cause "Single Block MBMS Access" requesting a single uplink block. The mobile station acts on any response sent by the network to that mobile station.

If the notification message or the (PACKET) MBMS ANNOUNCEMENT message does not contain any uplink resource description for an MPRACH, packet access for counting is initiated by the mobile station by sending a (PACKET) CHANNEL REQUEST message on the common (P)RACH, with access cause "Single Block MBMS Access" requesting a single uplink block.

Upon reception by the network of a (PACKET) CHANNEL REQUEST message with access cause "Single Block MBMS Access", the network sends an IMMEDIATE ASSIGNMENT message on CCCH (or a PACKET UPLINK ASSIGNMENT message on PAGCH) allocating one uplink block to the mobile station.

Upon reception by the mobile station of an IMMEDIATE ASSIGNMENT (respectively PACKET UPLINK ASSIGNMENT) message corresponding to one of its (PACKET) CHANNEL REQUEST messages and allocating one uplink radio block for MBMS access, the mobile station sends in this radio block an MBMS SERVICE REQUEST message on PACCH to the network including its TLLI, the TMGI and, if available, the MBMS Session Identity of the session, and enters non-DRX mode. If the mobile station supports the enhanced fast reception resumption (see 6.2.2.3) it shall indicate this in the MBMS SERVICE REQUEST message. In case the MBMS SERVICE REQUEST message is not correctly received on the network side, the network may repeat the IMMEDIATE ASSIGNMENT message on CCCH (or PACKET UPLINK ASSIGNMENT message on PAGCH), allowing the mobile station to re-send the MBMS SERVICE REQUEST message. The reception by the network of the MBMS SERVICE REQUEST message from a number of mobile stations allows the network to estimate in a given cell the number of mobile stations interested in a given session.

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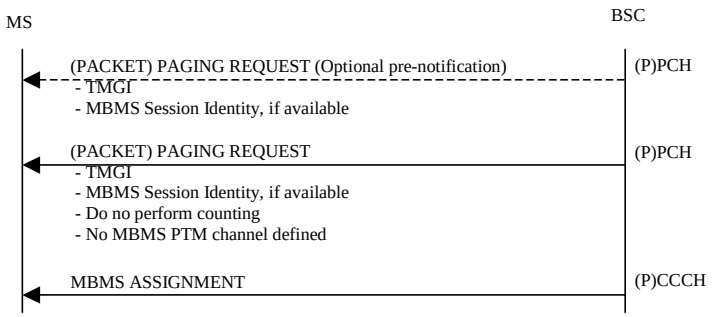

FIGURE 6.1.1.3.a: No counting and no PTM Bearer defined

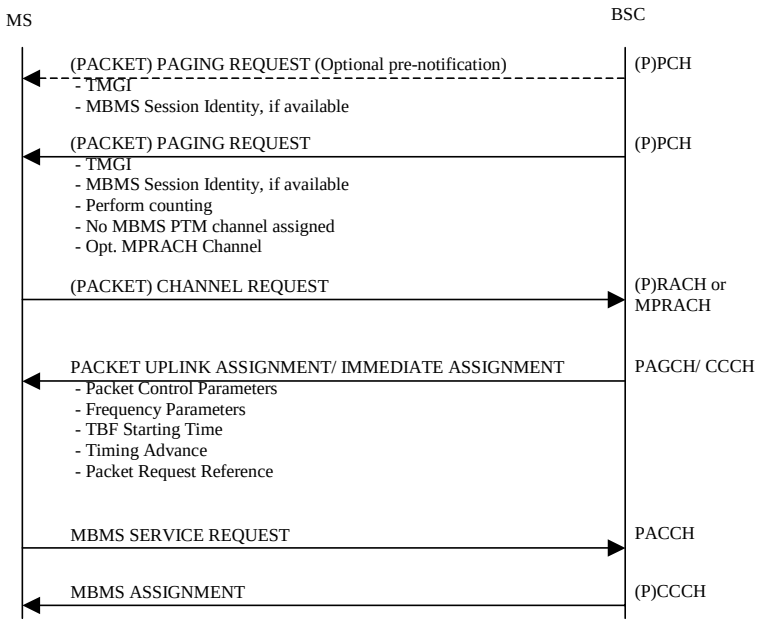

FIGURE 6.1.1.3.b: Counting used

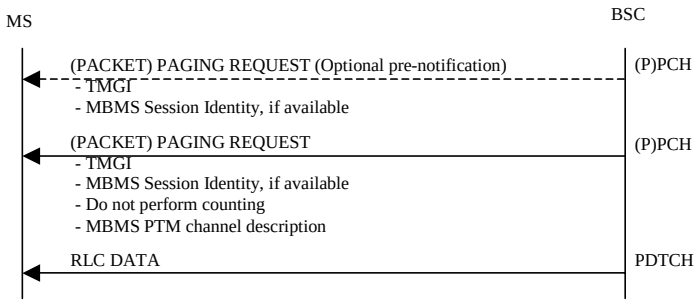

FIGURE 6.1.1.3.c: PTM Bearer established

This estimate may be used by the network to establish a point-to-multipoint channel for a given session, possibly characterized by an uplink feedback channel, or to notify the mobile stations that no point-to-multipoint channel will be established.

In case an uplink feedback channel is established, to receive MBMS DOWNLINK ACK/NACK messages from the mobile stations addressing of mobile stations is required. This procedure is described in sub-clause 6.1.1.5. The network may address (i.e. distribute MS_ID identifiers to) only a subset of the counted mobile stations. In this case, mobile stations without an allocated MS_ID shall only listen to the MBMS p-t-m radio bearer and will not send any feedback.

********** Next modified section **********

6.1.1.5 Address assignment procedure

The assignment of an MS_ID address to a counted mobile station is performed by the network sending an MBMS MS_ID ASSIGNMENT message on the PACCH/D of the point-to-multipoint radio bearer addressed via the MBMS_BEARER_ID. If an MBMS ASSIGNMENT message is sent as a non-distribution message it can contain MS_ID and then no MBMS MS_ID ASSIGNMENT message needs to be sent. The MS_ID to be used in the target cell after a cell reselection can also be assigned to the mobile station in an MBMS NEIGHBOURING CELL INFORMATION message sent by the network in the old cell (see 6.2.2.3). On a given point-to-multipoint bearer there is a one-to-one relationship between an MBMS_BEARER_ID + MS_ID combination and the TLLI of the mobile station. The MBMS MS_ID ASSIGNMENT message also includes the timing advance parameters for the addressed mobile station.

The network may request an addressed mobile station to acknowledge, with a PACKET CONTROL ACKNOWLEDGEMENT message, the reception of the MBMS MS_ID ASSIGNMENT message.

The mobile stations are identified with a MBMS_BEARER_ID + MS_ID combination, which is provided within the TFI field. Both the MBMS_BEARER_ID and the MS_ID are variable length fields inside the TFI field. The MBMS_BEARER_ID may range from a 1-bit field up to a 5-bit field (in the latter case no mobile station may be addressed). The MS_ID may range from a 1-bit field up to a 4-bit field. At any time the overall size of the MBMS_BEARER_ID + MS_ID combination is a 5-bit field, i.e. the size of the TFI field. On a PDCH an MBMS bearer is identified by the MBMS_BEARER_ID contained in the most significant bit(s) part of the TFI field; all TFI values whose most significant bits are equal to a given MBMS_BEARER_ID are reserved for this MBMS bearer and shall not be used for any other (E)GPRS TBFs or p-t-m radio bearer on that PDCH. All the mobile stations receiving the MBMS p-t-m radio bearer identified by a given MBMS_BEARER_ID shall try to decode all the RLC/MAC blocks where the TFI field contains this MBMS_BEARER_ID.

The network may modify the lengths of the MBMS_BEARER_ID and the MS_ID fields during an ongoing MBMS session in order to dynamically change the multiplexing of different MBMS p-t-m radio bearers and/or (E)GPRS TBFs on the same PDCH(s). The network performs such reconfiguration of an MBMS session by sending a PACKET DOWNLINK ASSIGNMENT message on the PACCH/D, containing the old and the new MBMS_BEARER_ID.

The network may reallocate or delete the MS_ID value assigned to a specific MS with an MBMS MS_ID ASSIGNMENT message.

********** Next modified section **********

6.2.1 Distribution of MBMS neighbouring cell information

If in a given cell an MBMS session is being sent on a p-t-m channel; and if in any neighbouring cell of that given cell, the same session is being sent on a p-t-m channel, the network may provide in that given cell for that MBMS session, information about the characteristics (frequency and timeslot allocation) of the MBMS p-t-m channel and the relevant MBMS_BEARER_ID of each of these neighbouring cells. The network shall not provide neighbouring cell information for sessions that are not being sent in that given cell.

This information is provided to mobile stations on the PACCH/D of the p-t-m channel using the MBMS NEIGHBOURING CELL INFORMATION message. This message also includes an indication of whether an uplink feedback channel associated to the MBMS p-t-m channel is established in the specific cell, and if so on which timeslot, and the MBMS In-band Signalling Indicator (see sub-clause 6.6).

In order to increase the likelihood that all mobile stations prior to reselecting a cell, have received, if available, the MBMS NEIGHBOURING CELL INFORMATION message(s) for that cell:

- If feedback is in use, a mobile station when polled shall indicate in the MBMS DOWNLINK ACK/NACK message as many as possible of and up to the 6 strongest non-serving carriers to the network. The network may

in turn prioritise the transmission of MBMS NEIGHBOURING CELL INFORMATION messages according to the neighbouring cells reported by the mobile stations

If the mobile station has triggered cell re-selection towards a neighbouring cell, it indicates this with the RESEL_CRITERIA_FULFILLED parameter in the MBMS DOWNLINK ACK/NACK message. The mobile station shall then only include the target cell in the MBMS DOWNLINK ACK/NACK message.

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In addition, if so ordered by the network in GPRS Cell Options IE, a mobile station monitoring an MBMS session on a p-t-m channel shall not reselect a suitable neighbouring cell until it has received, if available, an MBMS NEIGHBOURING CELL INFORMATION message for that cell and that session. If within a given time after having determined a suitable neighbouring cell, the mobile station still has not received any MBMS NEIGHBOURING CELL INFORMATION message for that neighbouring cell and that session, the mobile station shall proceed with cell reselection.

NOTE: The order in which the MBMS NEIGHBOURING CELL INFORMATION messages are sent is implementation dependent.

********** Next new section **********

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6.2.2.3 Enhanced fast reception resumption

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In case a mobile station has indicated in the MBMS DOWNLINK ACK/NACK message that cell re-selection towards a neighbouring cell has been triggered (as described in sub-clause 6.2.1) and there is an uplink feedback channel established for the concerned MBMS bearer in that target cell, the network may allocate an MS_ID for that mobile station in the target cell and assign it to the mobile station with an MBMS NEIGHBOURING CELL INFORMATION message in the old cell. When the mobile station has received the information about the MBMS bearer in the target cell, and the MS_ID allocated to the mobile station there, the mobile station shall immediately switch to the MBMS bearer and continue receiving the MBMS session in the target cell. No address assignment procedure needs then to be performed by the mobile station.

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Initially, the mobile station shall – upon polling - send access bursts on the uplink feedback channel. The network will use these access bursts in order to determine timing advance parameters to be used for the mobile station in the cell. The timing advance parameters are sent to the mobile station in a PACKET POWER CONTROL/TIMING ADVANCE message sent on the PACCH. After that, the mobile station shall – upon polling - send MBMS DOWNLINK ACK/NACK messages on the uplink feedback channel.

A mobile station that supports enhanced fast reception resumption shall indicate this in the MBMS SERVICE REQUEST message.

Page 1: [1] Comment [H3] **Explanation of field**

Enter the CR number here. This number is allocated by the 3GPP support team. It consists of at least three digits, padded with leading zeros if necessary.

Page 1: [2] Comment [H5] **Explanation of field**

Enter the version of the specification here. This number is the version of the specification to which the CR will be applied if it is approved. Make sure that the latest version of the specification (of the relevant release) is used when creating the CR. If unsure what the latest version is, go to http://www.3gpp.org/specs/specs.htm.

Page 1: [3] Comment [H6] **Explanation of field**

For help on how to fill out a field, place the mouse pointer over the special symbol closest to the field in question.

Page 1: [4] Comment [H9] **Explanation of field**

Enter a concise description of the subject matter of the CR. It should be no longer than one line. Do not use redundant information such as "Change Request number xxx to 3GPP TS xx.xxx".

Page 1: [5] Comment [H10] **Explanation of field**

Enter the source of the CR. This is either (a) one or several companies or, (b) if a (sub)working group has already reviewed and agreed the CR, then list the group as the source.

Page 1: [6] Comment [H11] **Explanation of field**

Enter the acronym for the work item which is applicable to the change. This field is mandatory for category F, B & C CRs for release 4 and later. A list of work item acronyms can be found in the 3GPP work plan. See http://www.3gpp.org/ftp/information/work_plan/ .
The list is also included in a MS Excel file included in the zip file containing the CR cover sheet template.

Page 1: [7] Comment [H12] **Explanation of field**

Enter the date on which the CR was last revised. Format to be interpretable by English version of MS Windows ® applications, e.g. 19/02/2002.

Page 1: [8] Comment [H13] **Explanation of field**

Enter a single letter corresponding to the most appropriate category listed below. For more detailed help on interpreting these categories, see the Technical Report 21.900 "TSG working methods".

Page 1: [9] Comment [H16] **Explanation of field**

Enter text which describes the most important components of the change. i.e. How the change is made.

Page 1: [10] Comment [H17] **Explanation of field**

Enter here the consequences if this CR was to be rejected. It is necessary to complete this section only if the CR is of category "F" (i.e. correction).

Page 1: [11] Comment [H19] **Explanation of field**

Tick "yes" box if any other specifications are affected by this change. Else tick "no". You MUST fill in one or the other.

Page 1: [12] Comment [H20] **Explanation of field**

List here the specifications which are affected or the CRs which are linked.

Page 1: [13] Comment [H21] **Explanation of field**

Enter any other information which may be needed by the group being requested to approve the CR. This could include special conditions for it's approval which are not listed anywhere else above.