TSG-RAN Meeting #28
Quebec, Canada, 01-03 June 2005

RP-050316
agenda item 8.4

Source: **TSG-RAN WG2.**

Title: **CRs (Rel-6) on MBMS corrections (25.331)**

The following CRs are in RP-050316:

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
25.331	2548	2	Rel-6	Miscellaneous MBMS corrections (set II)	F	6.5.0	6.6.0	R2-051703	MBMS-RAN
25.331	2549	1	Rel-6	Correction to MBMS notification procedure	F	6.5.0	6.6.0	R2-051129	MBMS-RAN
25.331	2550	1	Rel-6	FACH Measurement Occasion when UE receives MBMS	F	6.5.0	6.6.0	R2-051130	MBMS-RAN
25.331	2551	-	Rel-6	Frequency layer dispersion	F	6.5.0	6.6.0	R2-051115	MBMS-RAN
25.331	2560	1	Rel-6	Addition of the number of MBMS Neighbour Cell PTM Information messages to the MBMS Modified Services Information message.	F	6.5.0	6.6.0	R2-051214	MBMS-RAN
25.331	2561	1	Rel-6	Addition of MBMS counting for UEs in Cell_PCH and Cell_FACH states and addition of UE requested p-t-p bearer establishment	F	6.5.0	6.6.0	R2-051683	MBMS-RAN
25.331	2601	1	Rel-6	Validity of PtM configurations	F	6.5.0	6.6.0	R2-051570	MBMS-RAN
25.331	2609	2	Rel-6	Introduction of an S-CCPCH power offset difference in order to improve cell selection for soft and selective combining	C	6.5.0	6.6.0	R2-051698	MBMS-RAN
25.331	2613	-	Rel-6	MBMS asn1 issues	B	6.5.0	6.6.0	R2-051559	MBMS-RAN
25.331	2614	-	Rel-6	SCCPCH timing offset information for FDD MBMS soft combining	F	6.5.0	6.6.0	R2-051563	MBMS-RAN
25.331	2615	-	Rel-6	MBMS corrections on signalling optimization	F	6.5.0	6.6.0	R2-051562	MBMS-RAN

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Tdoc ⌘R2-051703

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2548** ⌘**rev** **2** ⌘ Current version: **6.5.0** ⌘

*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:	⌘	Miscellaneous MBMS corrections (set II)
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	23/05/2005
Category:	⌘	**F**
Release:	⌘	REL-6

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: ⌘ There are several small errors in the MBMS message and procedural specification parts

Summary of change: ⌘ The original revision of this CR included the following changes

- Clarifies the UE behaviour in case the procedure used to respond to counting fails
- Removal of the rake combining option by removing the IE MBMS Rake combinable group (and the corresponding procedure text) and the IE Type of L1- combining
- Adds an MBMS specific persistence to the MBMS Modified Services Information message (as well as the associated procedural specification)
- Adds the MBMS PL Service Restriction information to the MBMS General Information message (as well as the associated procedural specification)
- Introduces a default TFCS for SCCPCH carrying MBMS
- The ASN.1 of the –r6 versions of the reconfiguration messages lacks optionality for the IE MBMS PL Service Restriction information

In the updated version of this CR the following changes were added:

- The counting procedure was corrected concerning the end of the procedure in case of a counting failure
- Clarification is added that the UE shall re- establish the RLC entity used for MCCH reception when it selects another cell
- Clarifies that the order of UE actions upon receiving MBMS PL Service Restriction Information and that the UE shall move to a restricted PL only after having completed the release of conflicting non- prioritised services. Furthermore, clarification is added until when the restriction applies
- Within the procedural specification for counting, the MBMS UNMODIFIED

SERVICES INFO message is removed as a possible trigger for counting to align with the message specification
- Correction of references as well as an editorial correction of the tabular (version column)
- A small ASN.1 error was corrected (import list)

In the agreed version of the CR there were some further editorial changes (marked yellow)

In revision 1 of the CR, the following changes were added (marked blue):
- The value of a number of constants has been changed (R2-051435)
- The semantics description for the modification period is corrected, i.e. the actual modification period is equal to 2^m (instead of 2^r, R2-051257)
- In case MAC indicates a failure to transmit the RRC connection request message, T318 is not started but the UE moves to idle mode immediately (R2-051259)
- A new code point is added for the IE MBMS required UE action, indicating counting applies while p-t-m continues unmodified (R2-051265)
- A number of miscellaneous corrections (R2-051269)
  - The MCCH message order it is clarified, which is independent of a change in contents of the "MBMS UNMODIFIED SERVICES INFORMATION" message
  - Some furthere editorial changes e.g. updating of references
  - The use of protocol extensions for MBMS messages is clarified
  - The need of IE "MSCH configuration information" in the message "MBMS Current Cell p-t-m rb Information" is corrected, aligning with ASN.1
  - The need of IE "MBMS L1 combining cycle length" within in the IE "MBMS L1 combining schedule" is corrected, aligning with ASN.1
- Some obsolete FFS/ TBS have been removed
- The MBMS specific processes applicable in each RRC state are clarified (R2-051328)
- It is clarified that the UE behaviour is unspecified if an MBMS transmission identity appears more than once

In revision 2 of the CR, the following changes were added (marked green):
- Clarification regarding the modification, repetition and access info period boundaries

Consequences if not approved:	⌘	The errors in the MBMS message and procedural specification parts remain

Clauses affected:	⌘				
Other specs affected:	⌘	Y / N	Other core specifications Test specifications O&M Specifications	⌘	(e.g. 25.214 CR 0392rev1).
		N X X			
Other comments:	⌘	Includes changes proposed by several companies (Siemens, Vodafone/ Motorola, Huawei, LG, ZTE Corporation)			

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.2 Processes in UE modes/states

NOTE: This subclause specifies what processes shall be active in the UE in the different RRC modes/states. The related procedures and the conditions on which they are triggered are specified either in clause 8 or elsewhere in the relevant process definition.

7.2.1 UE Idle mode

UE processes that are active in UE Idle mode are specified in [4].

The UE shall perform a periodic search for higher priority PLMNs as specified in [25].

7.2.2 UTRA RRC Connected mode

In this specification unless otherwise mentioned "connected mode" shall refer to "UTRA RRC connected mode".

7.2.2.1 URA_PCH or CELL_PCH state

In the URA_PCH or CELL_PCH state the UE shall perform the following actions:

NOTE: Neither DCCH nor DTCH are available in these states.

1> if the UE is "in service area":

2> maintain up-to-date system information as broadcast by the serving cell as specified in the subclause 8.1.1;

2> perform cell reselection process as specified in [4];

2> perform a periodic search for higher priority PLMNs as specified in [25];

NOTE: If the DRX cycle length is 80ms, then a search for higher priority PLMNs may not identify all the available PLMNs due to the paging occasion on the current serving cell coinciding with the MIB of the cell of interest.

2> monitor the paging occasions and PICH monitoring occasions determined according to subclauses 8.6.3.1a and 8.6.3.2 and receive paging information on the PCH mapped on the S-CCPCH selected by the UE according to the procedure in subclause 8.5.19;

2> act on RRC messages received on PCCH and BCCH;

2> perform measurements process according to measurement control information as specified in subclause 8.4 and in subclause 14.4;

2> maintain up-to-date BMC data if it supports Cell Broadcast Service (CBS) as specified in [37];

2> act on RRC messages received on MCCH if it supports MBMS and has activated an MBMS service as specified in subclause 8.7;

2> run timer T305 for periodical URA update if the UE is in URA_PCH or for periodical cell update if the UE is in CELL_PCH.

1> if the UE is "out of service area":

2> perform cell selection process as specified in [4];

2> run timer T316;

2> run timer T305;

2> if the cell selection process fails to find a suitable cell after a complete scan of all RATs and all frequency bands supported by the UE, the UE shall after a minimum of TimerOutOfService time (default value 30 s) of being "out of service area":

3> indicate all available PLMNs to NAS to enable the selection of a new PLMN;

3> if an acceptable cell is found then the UE shall camp on that cell to obtain limited service as defined in [4] and, perform actions according to subclause 8.5.24;

3> else if no acceptable cell is found, the UE shall continue looking for an acceptable cell as defined in [4].

7.2.2.2 CELL_FACH state

In the CELL_FACH state the UE shall perform the following actions:

NOTE: DCCH and, if configured, DTCH are available in this state.

1> if the UE is "in service area":

2> maintain up-to-date system information as broadcast by the serving cell as specified in subclause 8.1.1;

2> perform cell reselection process as specified in [4];

2> perform measurements process according to measurement control information as specified in subclause 8.4 and in subclause 14.4;

2> run timer T305 (periodical cell update);

2> select and configure the RB multiplexing options applicable for the transport channels to be used in this RRC state;

2> listen to all FACH transport channels mapped on the S-CCPCH selected by the UE according to the procedure in subclause 8.5.19;

2> act on RRC messages received on BCCH, CCCH and DCCH;

2> act on RRC messages received on MCCH if it supports MBMS and has activated an MBMS service as specified in subclause 8.7;

2> act on RRC messages received on, if available, SHCCH (TDD only).

1> if the UE is "out of service area":

2> perform cell selection process as specified in [4];

2> run timers T305 (periodical cell update), and T317 (cell update when re-entering "in service") or T307 (transition to Idle mode), if started;

2> run timers T314 and/or T315, if started;

2> if the cell selection process fails to find a suitable cell after a complete scan of all RATs and all frequency bands supported by the UE, the UE shall after a minimum of TimerOutOfService time (default value 30 seconds) of being "out of service area":

3> indicate all available PLMNs to NAS to enable the selection of a new PLMN;

3> if an acceptable cell is found then the UE shall camp on that cell to obtain limited service as defined in [4] and perform actions according to subclause 8.5.24;

3> else if no acceptable cell is found, the UE shall continue looking for an acceptable cell as defined in [4].

7.2.2.3 CELL_DCH state

In the CELL_DCH state the UE shall perform the following actions:

NOTE: DCCH and, if configured, DTCH are available in this state.

1> read system information broadcast on FACH as specified in subclause 8.1.1.3 (applicable only to UEs with certain capabilities and in FDD mode);

1> read the system information as specified in subclause 8.1.1 (for UEs in TDD mode);

1> perform measurements process according to measurement control information as specified in subclause 8.4 and in clause 14;

1> select and configure the RB multiplexing options applicable for the transport channels to be used in this RRC state;

1> act on RRC messages received on DCCH;

1> act on RRC messages received on BCCH (applicable only to UEs with certain capabilities and in FDD mode);

1> act on RRC messages received on MCCH if it supports MBMS and has activated an MBMS service as specified in subclause 8.7 (applicable only to UEs supporting MBMS with certain capabilities);

1> act on RRC messages received on BCCH (TDD only) and, if available, SHCCH (TDD only).

8.1.3.2 Initiation

The UE shall initiate the procedure when upper layers in the UE requests the establishment of a signalling connection and the UE is in idle mode (no RRC connection exists), as specified in subclause 8.1.8.

Upon initiation of the procedure, the UE shall:

1> set the variable PROTOCOL_ERROR_INDICATOR to FALSE;

1> if the USIM is present:

2> set the value of "THRESHOLD" in the variable "START_THRESHOLD" to the 20 MSBs of the value stored in the USIM [50] for the maximum value of START for each CN Domain.

1> if the SIM is present:

2> set the value of "THRESHOLD" in the variable "START_THRESHOLD" to the default value in [40] for each CN Domain.

1> set the IE "Initial UE identity" in the variable INITIAL_UE_IDENTITY according to subclause 8.5.1;

1> set the contents of the RRC CONNECTION REQUEST message according to subclause 8.1.3.3;

1> set CFN in relation to SFN of current cell according to subclause 8.5.15;

1> perform the mapping of the Access Class to an Access Service Class as specified in subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;

1> submit the RRC CONNECTION REQUEST message for transmission on the uplink CCCH;

1> set counter V300 to 1; and

1> if the variable ESTABLISHMENT_CAUSE is set to "MBMS reception":

2> when the MAC layer indicates success or failure to transmit the message

3> If the MAC layer indicates failure:

4> enter idle mode:

4> consider the procedure to be unsuccessful;

4> Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;

4> the procedure ends.

3>else:

3> start timer T318;

~~2> start timer T318 when the MAC layer indicates success or failure to transmit the message;~~

3~~2~~> apply value 0 for counter N300 regardless of the value included in IE "UE Timers and Constants in idle mode";

1> otherwise:

2> start timer T300 when the MAC layer indicates success or failure to transmit the message.

1> select a Secondary CCPCH according to [4];

1> start receiving all FACH transport channels mapped on the selected Secondary CCPCH.

8.3.1.2 Initiation

A UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

2> if the UE is in URA_PCH or CELL_PCH state; and

2> if the UE has uplink RLC data PDU or uplink RLC control PDU on RB1 or upwards to transmit:

3> perform cell update using the cause "uplink data transmission".

1> Paging response:

2> if the criteria for performing cell update with the cause specified above in the current subclause are not met; and

2> if the UE in URA_PCH or CELL_PCH state, receives a PAGING TYPE 1 message fulfilling the conditions for initiating a cell update procedure specified in subclause 8.1.2.3:

3> perform cell update using the cause "paging response".

1> Radio link failure:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met:

3> if the UE is in CELL_DCH state and the criteria for radio link failure are met as specified in subclause 8.5.6; or

3> if the transmission of the UE CAPABILITY INFORMATION message fails as specified in subclause 8.1.6.6:

4> perform cell update using the cause "radio link failure".

1> Re-entering service area:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and

2> if the UE is in CELL_FACH or CELL_PCH state; and

2> if the UE has been out of service area and re-enters service area before T307 or T317 expires:

3> perform cell update using the cause "re-entering service area".

1> RLC unrecoverable error:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and

2> if the UE detects RLC unrecoverable error [16] in an AM RLC entity:

3> perform cell update using the cause "RLC unrecoverable error".

1> Cell reselection:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met:

3> if the UE is in CELL_FACH or CELL_PCH state and the UE performs cell re-selection; or

3> if the UE is in CELL_FACH state and the variable C_RNTI is empty:

4> perform cell update using the cause "cell reselection".

1> Periodical cell update:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and

2> if the UE is in CELL_FACH or CELL_PCH state; and

2> if the timer T305 expires; and

2> if the criteria for "in service area" as specified in subclause 8.5.5.2 are fulfilled; and

2> if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":

3> perform cell update using the cause "periodical cell update".

1> MBMS reception:

2> if the UE is in URA_PCH state; and

2> if the UE should perform cell update for MBMS counting as specified in subclause 8.7.4 or if the UE should perform cell update to receive an MBMS service as specified in subclause 8.6.9.~~4~~6:

3> perform cell update using the cause "MBMS reception".

A UE in URA_PCH state shall initiate the URA update procedure in the following cases:

1> URA reselection:

2> if the UE detects that the current URA assigned to the UE, stored in the variable URA_IDENTITY, is not present in the list of URA identities in system information block type 2; or

2> if the list of URA identities in system information block type 2 is empty; or

2> if the system information block type 2 can not be found:

3> perform URA update using the cause "change of URA".

1> Periodic URA update:

2> if the criteria for performing URA update with the causes as specified above in the current subclause are not met; and

2> if the timer T305 expires while the UE is in the service area; and

2> if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":

3> perform URA update using the cause "periodic URA update".

When initiating the URA update or cell update procedure, the UE shall:

1> stop timer T305;

1> if the UE is in CELL_DCH state:

2> in the variable RB_TIMER_INDICATOR, set the IE "T314 expired" and the IE "T315 expired" to FALSE;

2> if the stored values of the timer T314 and timer T315 are both equal to zero; or

2> if the stored value of the timer T314 is equal to zero and there are no radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315":

3> release all its radio resources;

3> indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;

3> clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;

3> clear the variable ESTABLISHED_RABS;

3> enter idle mode;

3> perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;

3> and the procedure ends.

2> if the stored value of the timer T314 is equal to zero:

3> release all radio bearers, associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";

3> in the variable RB_TIMER_INDICATOR set the IE "T314 expired" to TRUE.

2> if the stored value of the timer T315 is equal to zero:

3> release all radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315";

3> in the variable RB_TIMER_INDICATOR set the IE "T315 expired" to TRUE.

2> if the stored value of the timer T314 is greater than zero:

3> if there are radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314":

4> start timer T314.

3> if there are no radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314" or "useT315":

4> start timer T314.

2> if the stored value of the timer T315 is greater than zero:

3> if there are radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315":

4> start timer T315.

2> for the released radio bearer(s):

3> delete the information about the radio bearer from the variable ESTABLISHED_RABS;

3> when all radio bearers belonging to the same radio access bearer have been released:

4> indicate local end release of the radio access bearer to upper layers using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED_RABS;

4> delete all information about the radio access bearer from the variable ESTABLISHED_RABS.

2> move to CELL_FACH state;

2> select a suitable UTRA cell on the current frequency according to [4];

2> select PRACH according to subclause 8.5.17;

2> select Secondary CCPCH according to subclause 8.5.19;

2> use the transport format set given in system information as specified in subclause 8.6.5.1;

2> set the variable ORDERED_RECONFIGURATION to FALSE.

1> set the variables PROTOCOL_ERROR_INDICATOR, FAILURE_INDICATOR, UNSUPPORTED_CONFIGURATION and INVALID_CONFIGURATION to FALSE;

1> set the variable CELL_UPDATE_STARTED to TRUE;

1> if HS-DSCH is configured:

2> clear any stored IE "Downlink HS-PDSCH information";

2> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

1> if E-DCH is configured:

2> clear any stored IE "E-DCH information";

2> determine the value for the E_DCH_TRANSMISSION variable and take the corresponding actions as described in subclause 8.5.28.

1> if the UE is not already in CELL_FACH state:

2> move to CELL_FACH state;

2> select PRACH according to subclause 8.5.17;

2> select Secondary CCPCH according to subclause 8.5.19;

2> use the transport format set given in system information as specified in subclause 8.6.5.1.

1> if the UE performs cell re-selection:

2> clear the variable C_RNTI; and

2> stop using that C_RNTI just cleared from the variable C_RNTI in MAC.

1> set CFN in relation to SFN of current cell according to subclause 8.5.15;

1> in case of a cell update procedure:

2> set the contents of the CELL UPDATE message according to subclause 8.3.1.3;

2> submit the CELL UPDATE message for transmission on the uplink CCCH.

1> in case of a URA update procedure:

2> set the contents of the URA UPDATE message according to subclause 8.3.1.3;

2> submit the URA UPDATE message for transmission on the uplink CCCH.

1> set counter V302 to 1;

1> start timer T302 when the MAC layer indicates success or failure in transmitting the message.

8.5.12 Establishment of Access Service Classes

The PRACH resources (i.e. access slots and preamble signatures for FDD), timeslot (with specific frame allocation and channelisation code for 3.84 Mcps TDD and SYNC_UL codes (with specific frame allocation) for 1.28 Mcps TDD) may be divided between different Access Service Classes in order to provide different priorities of RACH usage. It is possible for more than one ASC or for all ASCs to be assigned to the same access slot/signature space in FDD or frame allocation/channelisation codes in 3.84 Mcps TDD or frame allocation/SYNC_UL codes in 1.28 Mcps TDD.

Access Service Classes shall be numbered in the range $0 \le i \le \text{NumASC} \le 7$ (i.e. the maximum number of ASCs is 8). An ASC is defined by an identifier, *i*, that defines a certain partition of the PRACH resources (SYNC_UL resources in 1.28 Mcps TDD) and an associated persistence value P_i. A set of ASC parameters consists of "NumASC+1" such parameters (i, P_i), $i = 0, \ldots,$ NumASC.

PRACH partitions shall be established using the information element "PRACH partitioning". The persistence values P_i to be associated with each ASC shall be derived from the dynamic persistence level $N = 1,\ldots, 8$ which is broadcast in System Information Block 7, and the persistence scaling factors s_i, broadcast in System Information Block Type 5 and possibly also in System Information Block Type 6, as follows:

$P(N) = 2^{-(N-1)}$

ASC # *i*	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
P_i	1	P(N)	s_2 P(N)	s_3 P(N)	s_4 P(N)	s_5 P(N)	s_6P(N)	s_7 P(N)

In addition, MBMS specific persistence values may be provided within the MBMS MODIFIED SERVICES INFORMATION message. The UE behaviour upon receiving upon receiving an MBMS dynamic persistence value is specified in 8.6.9.1a.

Scaling factors s_i are provided optionally for $i = 2,\ldots,$ NumASC, where NumASC+1 is the number of ASCs as defined by PRACH partitioning. If no scaling factors are broadcast, default value 1 shall be used if NumASC ≥ 2.

If $k \ge 1$ scaling factors are broadcast and NumASC ≥ k+2 then the last scaling factor s_{k+1} shall be used as default for the ASCs where $i > k$ +1.

The set of ASC parameters is provided to MAC with the CMAC-Config-REQ primitive (see [15]), the PRACH partitioning is provided to PHY using the CPHY-RL-Setup-REQ primitive (see [34]).

The ASC enumeration shall be such that it corresponds to the order of priority (ASC 0 = highest priority, ASC 7 = lowest priority). ASC 0 shall be used in case of Emergency Call or for reasons with equivalent priority.

ASCs are numbered according to the order in which the IEs "ASC Setting" appear in the IE "PRACH partitioning", where the first IE "ASC Setting" describes ASC 0, the second IE "ASC Setting" describes ASC 1, etc.

At radio bearer setup/reconfiguration each involved logical channel is assigned a MAC Logical channel Priority (MLP) in the range 1,…,8. When the MAC sublayer is configured for RACH transmission in the UE, these MLP levels shall be employed for ASC selection on MAC.

8.5.26 Service prioritisation

The UE may perform the Service prioritisation procedure whenever it detects that it becomes incapable of receiving all services it is interested in as well as whenever there are changes concerning the subset of services that it has selected to receive. This may occur upon state transitions, service start, service stop, service reconfiguration eg. transfer mode change and preferred frequency layer changes.

If the UE detects that it is incapable of receiving all services, the UE may:

1> request upper layers to prioritise the services and to initiate release of non- prioritised services that may cause interruption in the reception of the prioritised services;

1> if reception of the highest priority MBMS service is inhibited by one or more MBMS service(s) provided via a p-t-p radio bearer:

2> request UTRAN to terminate these MBMS service(s) using the MBMS MODIFICATION REQUEST message as specified in subclause 8.7.6.

NOTE: The termination of MBMS services is performed by RRC procedures, while clearing of non- MBMS services is performed by upper layers.

8.5.27 MBMS~~Preferred~~ frequency ~~layer~~ selection

The UE shall perform the ~~Preferred~~ MBMS frequency layer selection procedure upon receiving the IE "MBMS Preferred frequency information" or when specified explicitly e.g. as in 8.6.9.2 .

The UE shall:

1> consider MBMS services, for which a preferred frequency layer is specified, to be available only on the concerned frequency;

1> consider MBMS services, for which no preferred frequency layer is specified, to be available on all frequencies;

1> consider that UTRAN will provide any non- MBMS services on all frequencies unless specified otherwise, i.e. as specified in subclause 8.6.9.2;

1> if based on the above, the UE detects that it is incapable of receiving all services:

2> perform the Service prioritisation procedure as specified in subclause 8.5.26.

~~1> if more than one preferred frequency layer applies for the services included in variable MBMS_ACTIVATED_SERVICES:~~

2> after having completed the release of non- prioritised services inhibiting reception of the prioritised service(s), if applicable, select the ~~preferred~~ frequency corresponding with ~~of~~ the service(s) prioritised by ~~that~~ upper layers ~~indicate to have highest priority of the services for which a preferred frequency layer applies.~~

1> otherwise:

2~~1~~> if only one preferred frequency layer applies for the services included in variable MBMS_ACTIVATED_SERVICES:

3~~2~~> select that preferred frequency.

2~~1~~> otherwise:

3~~2~~> select the currently used frequency.

1> if the selected ~~preferred~~ frequency is different from the currently used frequency:

2> if the UE is in CELL_DCH:

3> request UTRAN to be moved to the preferred frequency by means of the MBMS MODIFICATION REQUEST message as specified in subclause 8.7.6;

2> otherwise:

3> apply the cell-reselection procedure as described in [~~25.30~~4], using the received "MBMS Preferred frequency information",

3> if the UE re-selects to a cell on the indicated preferred frequency:

4> if the UE is in CELL_FACH, CELL_PCH or URA_PCH:

5> act according to subclause 8.3.1.2.

4> apply the MCCH acquisition procedure, as specified in subclause 8.7.2.

8.6.9.1a MBMS dynamic persistence level

If the IE "MBMS dynamic persistence level" is included the UE shall:

1> Apply the dynamic persistence level in place of that broadcast in SIB 7 for MBMS related PRACH transmissions that are made within the modification period in which this IE was received.

8.6.9.2 MBMS PL Service Restriction Information

The UE shall:

1> if the UE receives a message triggering the reconfiguration procedure or a Cell Update Confirm message and

1> that message does include the IE "MBMS PL Service Restriction Information": ~~is not included; and~~

2> consider that UTRAN will not provide any non- MBMS services on the MBMS preferred frequencies.

~~1> if the IE "RRC state indicator" is set to a value other than 'CELL_DCH':~~

~~2> apply the MBMS frequency layer convergence information provided within IE "MBMS preferred frequency information" in the indicated RRC state.~~

1> otherwise:

~~2> apply the MBMS frequency layer convergence information provided within IE "MBMS preferred frequency information" in the indicated RRC state with the following modification.~~

2~~3~~> consider that UTRAN will ~~not~~ provide any non- MBMS services on the MBMS preferred frequencies.

1> perform the MBMS frequency selection procedure as specified in 8.5.27.

~~NOTE: As a result of the above modification, the UE may be incapable of receiving all services, in which case it should perform the service prioritization procedure as specified in subclause 8.5.26.~~

~~8.6.9.4a MBMS Rake combinable group id~~

~~If the IE "MBMS Rake combinable group id" is included the UE may:~~

~~1> perform the Rake combining between neighbouring cells for which the same identity is indicated.~~

<Cut until the next modification>

8.6.9.6 MBMS Required UE action

If the IE "MBMS required UE action" is included the UE shall:

1> if the "MBMS required UE action" is set to 'None':

2> take no action with respect to this IE.

1> if the IE "MBMS required UE action" is set to 'Acquire counting info' or set to 'Acquire counting info– PTM RBs unmodified':

2> perform the MBMS counting procedure as specified in subclause 8.7.4;

NOTE: If upper layers indicate that an MBMS transmission has already been received correctly, the UE will continue as if the information about the concerned MBMS transmission was not included in the message. This implies that the UE does not respond to counting for a transmission already received correctly.

1> if the IE "MBMS required UE action" is set to 'Acquire PTM RB info'; or

1> if the IE "MBMS required UE action" is set to 'Acquire counting info– PTM RBs unmodified' and the UE is not receiving a p-t-m RB for the concerned service:

2> continue acquiring the MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION messages without delaying reading of MCCH until the next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3

2> act upon the MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION message, if received, in accordance with subclause 8.7.5;

1> if the IE "MBMS required UE action" is set to 'Establish PMM connection':

2> if the UE is in idle mode:

3> indicate to upper layers that action is required to receive the concerned MBMS service.

2> if the UE is in URA_PCH:

3> perform a cell update procedure with cause "MBMS reception" as specified in subclause 8.3.1.2.

1> if the IE "MBMS required UE action" is set to 'Release PTM RB:

2> stop receiving the concerned MBMS service and clear all service specific information applicable for the concerned service.

8.6.9.9 MBMS Transmission identity

If the IE "MBMS transmission identity" is included the UE shall:

1> if upper layers indicate that the MBMS transmission has already been received correctly:

2> ignore the information about this MBMS transmission i.e. continue as if the information about the concerned MBMS transmission was not included in the message.

1> otherwise:

2> act upon the information about the concerned MBMS transmission as specified elsewhere.

The UE behaviour is unspecified if an MBMS transmission identity appears more than once in the combined list of transmissions i.e. the IE is included more than once in the MBMS MODIFIED SERVICES INFORMATION or in the MBMS UNMODIFIED SERVICES INFORMATION, or once in either messages.

8.6.9.9b MCCH configuration information

If the IE "MBMS configuration information" is included the UE shall:

1> Consider a modification period to start from the frame with the SFN value fulfilling the following equation:

$SFN \bmod 2^a = 0$

1> Consider a repetition period to start from the frame with the SFN value fulfilling the following equation:

$SFN \bmod 2^r = 0$

1> Consider a modification period to start from the frame with the SFN value fulfilling the following equation:

$SFN \bmod 2^m = 0$

1> configure the RLC entity in the UE used for receiving MCCH in accordance with 8.6.4.9;

1> configure the MAC entity in the UE, used for receiving MCCH, for receiving TCTF field unless the IE 'TCTF presence' is received;

8.7.1.1 General

The procedure for receiving MBMS control information is used by a UE to receive information from UTRAN concerning the way it provides MBMS services the UE has joined. The procedure applies to all UEs supporting MBMS, irrespective of its state (idle, URA_PCH, CELL_PCH, CELL_FACH and CELL_DCH).

Most MBMS control information is provided on the MCCH. The information on MCCH is transmitted using a fixed schedule, which is common for all services. MCCH information other than MBMS ACCESS INFORMATION message is transmitted periodically based on a repetition period. This MCCH information is repeated a configurable number of times with exactly the same content; the period in which the content of MCCH information other than MBMS ACCESS INFORMATION message remains unchanged is called the modification period. MBMS ACCESS INFORMATION message may be transmitted more frequently, based on the Access Info period. The transmissions of MBMS ACCESS INFORMATION message within a modification period need not have exactly the same content (the value of some parameters eg. IE 'Access probability factor – Idle' may change). Nevertheless, the transmissions of MBMS ACCESS INFORMATION message within a modification period should concern the same MBMS service(s), although information for a service may be removed eg. upon completion of the counting for that service.

The general principles are illustrated in figure 8.7.1-1, in which different colours indicate potentially different content of the MCCH information.

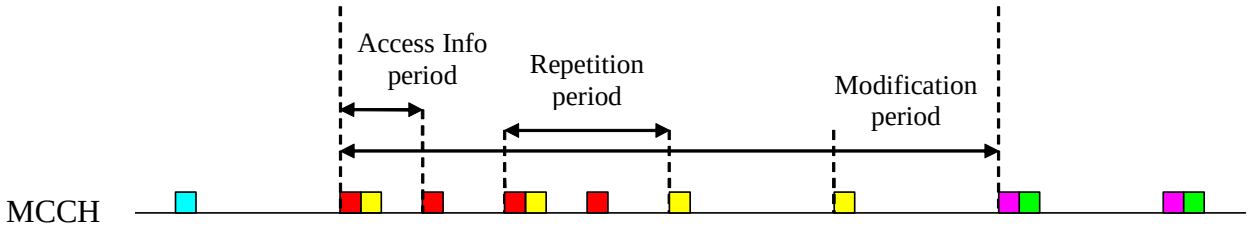

Figure 8.7.1-1: Scheduling of MCCH Information

For services provided via a p-t-m radio bearer scheduling information may be provided on an MSCH mapped on the same S-CCPCH as the p-t-m radio bearer(s). For some of the services provided p-t-m this scheduling information may be provided by signalling an MBMS SCHEDULING INFORMATION message at every scheduling period, while for others the MBMS SCHEDULING INFORMATION message may be signalled less frequently i.e. after a multiple of the scheduling period. In general, the UE is neither required to acquire MSCH information nor to act on it.

In case the UE shall acquire MCCH information that is scheduled at the same time as MSCH information, the reception of the MCCH information shall take precedence.

In order to minimise the time the UE needs to read MCCH to acquire the required information, UTRAN should schedule the MCCH messages in a specific order ie. messages which content has changed compared to the previous modification period should be scheduled prior to messages which contents has not changed. More specifically, the UE may assume that UTRAN schedules the MCCH messages in the following order:

MBMS MODIFIED SERVICES INFORMATION,

followed by messages which content changed - in the following order: MBMS GENERAL INFORMATION, MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION, one or more MBMS NEIGHBOURING CELL P-T-M RB INFORMATION,

MBMS UNMODIFIED SERVICES INFORMATION,

followed by messages which content did not change - in the following order: ~~MBMS UNMODIFIED SERVICES INFORMATION,~~ MBMS GENERAL INFORMATION, MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION, one or more MBMS NEIGHBOURING CELL P-T-M RB INFORMATION

8.7.1.3 UE requirements on reading of MCCH information

When requested to acquire MBMS control information other than the MBMS ACCESS INFORMATION message , the UE shall:

1> if requested to start reading MCCH at the next modification period:

2> start reading MCCH at the beginning of the next modification period.

1> otherwise

2> start reading MCCH at the beginning of the next repetition period.

1> if requested to stop reading MCCH at the end of the modification period:

2> continue reading MCCH until the required MBMS control information is received or until the UE detects a TTI in which no MCCH information is transmitted, whichever is first;

2> continue reading MCCH in this manner at every subsequent repetition period, until the information is received correctly or until the end of the modification period.

1> otherwise:

2> continue reading MCCH until the required MBMS control information is received or until the UE detects a TTI in which no MCCH information is transmitted, whichever is first;

2> continue reading MCCH in this manner at every subsequent repetition period, until the information is received correctly.

NOTE 1: The UE may combine information received at different repetition periods within a modification period.

When requested to acquire the MBMS ACCESS INFORMATION message, the UE shall:

1> if requested to start reading MCCH at the next modification period:

2> start reading MCCH at the beginning of the next modification period.

1> otherwise:

2> start reading MCCH at the beginning of the next access info period.

1> continue reading MCCH in this manner at every subsequent access info period, until the message is received correctly or until the end of the modification period.

If the UE is CELL_DCH and has a compressed mode pattern that overlaps with the period in which it needs to read MCCH, the UE may temporarily refrain from receiving MCCH unless it is capable of simultaneous operation. If the UE is CELL_FACH and has a measurement occasion that overlaps with the period in which it needs to read MCCH, the UE may temporarily refrain from receiving MCCH unless it is capable of simultaneous operation. Likewise, in Idle mode as

well as in CELL_PCH and URA_PCH states the UE may temporarily refrain from receiving MCCH if needed to fulfill the measurements performance requirements as specified in [4].

NOTE 2: The UTRAN should ensure that for each UE in CELL_FACH the assigned measurement occasions do not overlap constantly with the periodic MCCH transmissions.

If the UE selects to another cell, the UE shall re-establish the RLC entity used for MCCH reception.

<Cut until the next modification>

8.7.2.4 Reception of the MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION by the UE

Upon completing the reception of the MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION messages, the UE shall

1> act as follows for each of the services included in these messages provided that the service is included in variable MBMS_ACTIVATED_SERVICES and upper layers indicate that the session has not yet been received correctly (referred to as 'applicable services');

1> act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following;

1> if more than one preferred frequency applies for the applicable services:

2> delay acting upon the "MBMS Preferred frequency information" until after completing the MCCH acquisition;

2> act upon the "MBMS Preferred frequency information" as specified in subclause 8.6.9.4~~2~~ for the service(s) that upper layers indicate to have highest priority.

1> perform the service prioritisation procedure as specified in subclause 8.5.26;

1> if the UE receives an MBMS service using a p-t-m radio bearer and the received messages does not contain an IE "MBMS required UE action" set to "Acquire PTM RB info" or set to 'Acquire counting info– PTM RBs unmodified' for that service then the UE shall:

2> stop receiving the concerned MBMS service and clear all service specific information applicable for the concerned service.

8.7.3.4 UE action upon receiving MBMS MODIFIED SERVICES INFORMATION message

Upon receiving the MBMS MODIFIED SERVICES INFORMATION message, the UE shall act as follows for each of the services included in this messages provided that the service is included in variable MBMS_ACTIVATED_SERVICES and upper layers indicate that the session has not yet been received correctly (referred to as 'applicable services'):

1> act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following

1> if one or more preferred frequency applies for the applicable services:

2> if the UE is in CELL_FACH state:

3> acquire the MBMS GENERAL INFORMATION message

3> act as specified in 8.6.9.2 upon the IE "MBMS PL Service Restriction information" for the corresponding preferred frequency, as received in the MBMS GENERAL INFORMATION message;

2> delay acting upon the "MBMS Preferred frequency information" until after completing the MCCH acquisition;

2> act upon the "MBMS Preferred frequency information" as specified in 8.6.9.2 for the service(s) that upper layers indicate to have highest priority.

1> perform the service prioritisation procedure as specified in subclause 8.5.26;

1> if applicable, use a single MBMS MODIFICATION REQUEST to request release of radio bearers corresponding with lower priority MBMS services provided p-t-p and/or to request a move to the preferred frequency as specified in subclause 8.5.26 and subclause 8.6.9.2 respectively;

1> the procedure ends.

8.7.4 MBMS counting

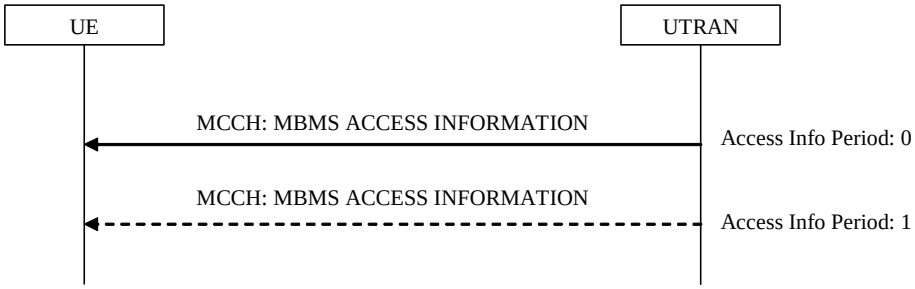

Figure 8.7.4-1: MBMS counting, normal

8.7.4.1 General

The MBMS counting procedure is used by the UE to inform UTRAN about its interest to receive an MBMS transmission. The procedure applies to UEs supporting MBMS that are in idle mode or in connected mode, URA_PCH state.

8.7.4.2 Initiation

The UE initiates the MBMS counting procedure for an MBMS transmission upon receiving an MBMS MODIFIED SERVICES ~~or MBMS UNMODIFIED SERVICES~~ message including IE "MBMS required UE action" with the value set to 'Acquire counting info' or set to 'Acquire counting info– PTM RBs unmodified'.

8.7.4.3 Reception of the MBMS ACCESS INFORMATION

The UE shall acquire the MBMS ACCESS INFORMATION message without delaying reading of MCCH until the next modification period in accordance with subclause 8.7.1.3. If the procedure the UE would apply to respond to counting (Idle mode: RRC connection establishment, connected mode: Cell update) is ongoing, the UE may defer acquiring the MBMS ACCESS INFORMATION message until this procedure has completed.

The UE behaviour upon receiving an MBMS ACCESS INFORMATION message that is contained in more than one TTI is not specified.

Upon receiving the MBMS ACCESS INFORMATION message including one or more MBMS service(s) it has joined, the UE shall for each service:

1> draw a random number, "rand", uniformly distributed in the range: $0 \leq rand < 1$

1> if the UE is in idle mode and 'rand' is lower than the value indicated by the IE 'Access probability factor-Idle' for the concerned service:

2> indicate to upper layers that action is required to receive the concerned MBMS service;

2> if the above contition applies for more than one service, initiate a single indication to upper layers;

2> if the RRC connection establishment succeeds, the procedure ends.

1> if the UE is in URA_PCH state and 'rand' is lower than the value indicated by the IE 'Access probability factor-URA_PCH' for the concerned service:

2> initiate the cell update procedure with 'Cell update cause' set to "MBMS reception", in accordance with subclause 8.3.1;

2> if the above condition applies for more than one service, initiate a single cell update;

2> if the cell update procedure succeeds, the procedure ends.

1> otherwise:

2> if the message triggering the MBMS counting procedure included the IE "Continue MCCH reading" with a value set to TRUE:

3> continue acquiring further MBMS ACCESS INFORMATION messages without delaying reading of MCCH until the next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3.

2> otherwise:

3> continue acquiring further MBMS ACCESS INFORMATION messages without delaying reading of MCCH until the next modification period and with stopping at the end of the modification period, in accordance with subclause 8.7.1.3.

8.7.4.4 Termination of the MBMS counting procedure

If the UE detects that the MBMS ACCESS INFORMATION message is not provided at an access info period; OR

If the UE receives an MBMS ACCESS INFORMATION message not including an MBMS service the UE has joined, the UE shall:

1> terminate the MBMS counting procedure.

8.7.4.5 Failure of the counting response procedure

If the counting response procedure (RRC connection establishment or Cell update) fails, the UE shall:

1> if the failure occurs in the same modification period as the one in which the UE initiated the counting response procedure or

1> if the message triggering the MBMS counting procedure included the IE "Continue MCCH reading" with a value set to TRUE that is applicable in the modification period in which the UE detects the failure:

2> continue acquiring further MBMS ACCESS INFORMATION messages without delaying reading of MCCH until the next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3.

1> otherwise:

2> the procedure ends.

8.7.5.3 Reception of the MBMS PTM RB information

Upon completing the reception of the MBMS COMMON P-T-M RB INFORMATION and the MBMS CURRENT CELL P-T-M RB INFORMATION messages for an MBMS service it has joined, the UE shall:

1> if the UE is already receiving an MTCH and does not have the capability to receive the new service in addition:

2> the UE behaviour is undefined.

NOTE: In this case, the UE may request upper layers to prioritise the services and only receive the service(s) prioritised by upper layers.

1> act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following;

1> if the UE previously received the service by means of p-t-p radio bearers or;

1> if the UE previously received the service by means of a p-t-m radio bearer from a cell belonging to another MBMS cell group:

2> re- establish RLC;

2> re- initialise PDCP (FFS).

1> start or continue receiving the indicated p-t-m radio bearers depending on its UE capabilities.

The UE shall continue acquiring the above messages until it has received a consistent set of MCCH information ie. both the MBMS COMMON P-T-M RB INFORMATION and the MBMS CURRENT CELL P-T-M RB INFORMATION message should be acquired in the same modification period.

8.7.5.4 Reception of the MBMS Neighbour Cell PTM RB information

Upon receiving the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION message for an MBMS service it has joined, the UE shall

1> use the indicated neighbouring cells, or a subset of them, for L1- or L2 combining;

1> start or continue receiving the indicated p-t-m radio bearers from the selected neighbouring cells depending on its UE capabilities~~, TBS~~.

The UE shall apply MBMS NEIGHBOURING CELL P-T-M RB INFORMATION only in combination with an MBMS COMMON P-T-M RB INFORMATION acquired in the same modification period.

10.1.1 Protocol extensions

RRC messages may be extended in future versions of this protocol, either by adding values for choices, enumerated and size constrained types or by adding information elements. An important aspect concerns the behaviour of a UE, conforming to this revision of the standard, upon receiving a not comprehended future extension. The details of this error handling behaviour are provided in clause 9.

NOTE 1: By avoiding the need for partial decoding (skipping uncomprehended IEs to continue decoding the remainder of the message), the RRC protocol extension mechanism also avoids the overhead of length determinants for extensions. "Variable length extension containers" (i.e. non critical extension containers that have their abstract syntax defined using the ASN.1 type "BIT STRING") have been defined to support the introduction of extensions to a release after the subsequent release is frozen (and UEs based on that subsequent release may appear). For this container a length determinant is used, which facilitates partial decoding of the container as well as the decoding of the extensions included after the container.

Two kinds of protocol extensions are distinguished: non-critical and critical extensions. In general, a receiver shall process a message including not comprehended non-critical extensions as if the extensions were absent. However, a receiver shall entirely reject a message including not comprehended critical extensions (there is no partial rejection) and notify the sender, as specified in clause 9.

The general mechanism for adding critical extensions is by defining a new version of the message, which is indicated at the beginning of the message.

The UE shall always comprehend the complete transfer syntax specified for the protocol version it supports; if the UE comprehends the transfer syntax defined within protocol version A for message 1, it shall also comprehend the transfer syntax defined within protocol version A for message 2.

The following table shows for which messages only non-critical extensions may be added while for others both critical and non-critical extensions may be added.

NOTE 2: Critical extensions can only be added to certain downlink messages.

Extensions	Message
Critical and non-critical extensions	ACTIVE SET UPDATE 10.2.1 ASSISTANCE DATA DELIVERY 10.2.4 CELL CHANGE ORDER FROM UTRAN 10.2.5 CELL UPDATE CONFIRM 10.2.8 COUNTER CHECK 10.2.9 DOWNLINK DIRECT TRANSFER 10.2.11 HANDOVER TO UTRAN COMMAND 10.2.16a HANDOVER FROM UTRAN COMMAND 10.2.15 MEASUREMENT CONTROL 10.2.17 PHYSICAL CHANNEL RECONFIGURATION 10.2.22 PHYSICAL SHARED CHANNEL ALLOCATION 10.2.25 RADIO BEARER RECONFIGURATION 10.2.27 RADIO BEARER RELEASE 10.2.30 RADIO BEARER SETUP 10.2.33 RRC CONNECTION REJECT 10.2.36 RRC CONNECTION RELEASE 10.2.37 RRC CONNECTION SETUP 10.2.40 SECURITY MODE COMMAND 10.2.43 SIGNALLING CONNECTION RELEASE 10.2.46 TRANSPORT CHANNEL RECONFIGURATION 10.2.50 UE CAPABILITY ENQUIRY 10.2.55 UE CAPABILITY INFORMATION CONFIRM 10.2.57 UPLINK PHYSICAL CHANNEL CONTROL 10.2.59 URA UPDATE CONFIRM 10.2.61 UTRAN MOBILITY INFORMATION 10.2.62
Non-critical extensions only	ACTIVE SET UPDATE COMPLETE 10.2.2 ACTIVE SET UPDATE FAILURE 10.2.3 CELL CHANGE ORDER FROM UTRAN FAILURE 10.2.6 CELL UPDATE 10.2.7 COUNTER CHECK RESPONSE 10.2.10 HANDOVER TO UTRAN COMPLETE 10.2.16b INITIAL DIRECT TRANSFER 10.2.16c HANDOVER FROM UTRAN FAILURE 10.2.16

Extensions	Message
	MBMS ACCESS INFORMATION 10.2.16e MBMS COMMON P-T-M RB INFORMATION 10.2.16f MBMS CURRENT CELL P-T-M RB INFORMATION 10.2.16g MBMS GENERAL INFORMATION 10.2.16h MBMS MODIFICATION REQUEST 10.2.16i MBMS MODIFIED SERVICES INFORMATION 10.2.16j MBMS NEIGHBOURING CELL P-T-M RB INFORMATION 10.2.16k MBMS SCHEDULING INFORMATION 10.2.16L MBMS UNMODIFIED SERVICES INFORMATION 10.2.16m MEASUREMENT CONTROL FAILURE 10.2.18 MEASUREMENT REPORT 10.2.19 PAGING TYPE 1 10.2.20 PAGING TYPE 2 10.2.21 PHYSICAL CHANNEL RECONFIGURATION COMPLETE 10.2.23 PHYSICAL CHANNEL RECONFIGURATION FAILURE 10.2.24 PUSCH CAPACITY REQUEST 10.2.26 RADIO BEARER RECONFIGURATION COMPLETE 10.2.28 RADIO BEARER RECONFIGURATION FAILURE 10.2.29 RADIO BEARER RELEASE COMPLETE 10.2.31 RADIO BEARER RELEASE FAILURE 10.2.32 RADIO BEARER SETUP COMPLETE 10.2.34 RADIO BEARER SETUP FAILURE 10.2.35 RRC CONNECTION RELEASE COMPLETE 10.2.38 RRC CONNECTION REQUEST 10.2.39 RRC CONNECTION SETUP COMPLETE 10.2.41 RRC STATUS 10.2.42 SECURITY MODE COMPLETE 10.2.44 SECURITY MODE FAILURE 10.2.45 SIGNALLING CONNECTION RELEASE INDICATION 10.2.47 Master Information Block 10.2.48.8.1 System Information Block type 1 to System Information Block type 18~~-Z~~ 10.2.48.8.42 to 10.2.48.8.219 SYSTEM INFORMATION CHANGE INDICATION 10.2.49 TRANSPORT CHANNEL RECONFIGURATION COMPLETE 10.2.51 TRANSPORT CHANNEL RECONFIGURATION FAILURE 10.2.52 TRANSPORT FORMAT COMBINATION CONTROL 10.2.53 TRANSPORT FORMAT COMBINATION CONTROL FAILURE 10.2.54 UE CAPABILITY INFORMATION 10.2.56 UPLINK DIRECT TRANSFER 10.2.58 URA UPDATE 10.2.60 UTRAN MOBILITY INFORMATION CONFIRM 10.2.63 UTRAN MOBILITY INFORMATION FAILURE 10.2.64
No extensions	SYSTEM INFORMATION 10.2.48 First Segment 10.2.48.1 Subsequent or last Segment 10.2.48.3 Complete SIB 10.2.48.5 SIB content 10.2.48.8.1

NOTE 3: For the SYSTEM INFORMATION message protocol extensions are only possible at the level of system information blocks.

10.2.16f MBMS COMMON P-T-M RB INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the p-t-m RB configuration information that may be common between different services, applicable in the current and/ or in neighbouring cells. The message contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
RB information list	MP	1 to <maxMBMS-CommonRB>			REL-6
>RB identity	MP		MBMS Common RB identity 10.3.9a.3		REL-6
>PDCP info	MP		PDCP info 10.3.4.2		REL-6
>RLC info	MP		RLC info 10.3.4.23		REL-6
TrCh information for each TrCh	MP	1 to <maxMBMS-CommonTrCh>			REL-6
>Transport channel identity	MP		MBMS Common TrCh identity 10.3.9a.4		REL-6
>TFS	MP		Transport format set 10.3.5.23		REL-6
TrCh information for each CCTrCh	MP	1 to <maxMBMS-CommonCCTrCh>			REL-6
>CCTrCH identity	MP		MBMS Common CCTrCh identity 10.3.9a.1		REL-6
>TFCS	M~~P~~D		Transport format combination set 10.3.5.20	The default value of the TFCS is specified in 14.10.1	REL-6
PhyCh information	MP	1 to <maxMBMS-CommonPhyCh>			REL-6
>PhyCh identity	MP		MBMS Common PhyCh identity 10.3.9a.2		REL-6
>Secondary CCPCH info MBMS	MP		Secondary CCPCH info MBMS 10.3.6.71a		REL-6

10.2.16g MBMS CURRENT CELL P-T-M RB INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the PTM RB configuration used to in a cell, in case one or more MBMS service is provided using p-t-m radio bearers. The message contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type	Current cell PTM RB info	REL-6
S-CCPCH list	OP	1 to <maxSCCPCH>		Absent in case MTCH are only mapped to the S-CCPCH(s) included in SIB type 5	REL-6
>S-CCPCH identity	OP		MBMS Current cell S-CCPCH identity 10.3.9a.5	When L1- combining applies, this identity is used to refer to this S-CCPCH within the NEIGHBOURING CELL P-T-M RB INFORMATION message	REL-6
>Secondary CCPCH info	MP		MBMS Common PhyCh identity 10.3.9a.2	Refers to a configuration in the common RB info	REL-6
>TrCh information common for all TrCh	MP		MBMS Common CCTrCh identity 10.3.9a.1	Refers to a (TFCS) configuration in the common RB info	REL-6
>TrCH information list	MP	1 to <maxTrChperSCCPCH>		List of FACH transport channels carrying one or more MTCH	REL-6
>>TrCh information	MP		MBMS Common TrCh identity 10.3.9a.4	Refers to a (TFS) configuration in the common RB info	REL-6
>>RB information list	OP	1 to <maxRBperTrCh>		The IE is absent if temporarily no RBs are mapped to this TrCh or if the TrCH only carries MSCH	REL-6
>>>RB information	MP		MBMS p-t-m RB information 10.3.9a.7a		REL-6
>>MSCH configuration information	~~M~~OP		MSCH configuration information 10.3.9a.16		REL-6
S-CCPCH in SIB type 5	OP	1 to <maxSCCPCH>		Every S-CCPCH's included in SIB type 5 may carry MTCH	REL-6
>S-CCPCH identity			Integer (1..maxSCCPCH)	Index of the S-CCPCH within the list included in SIB type 5	REL-6
>TrCH information list	MP	1 to <maxFACHPCH>		List of FACH transport channels carrying one or more MTCH	REL-6
>>TrCh identity	MP		Integer (1..maxFACHPCH)	Index of the FACH within the list of TrChs defined for that S-CCPCH as included in SIB type 5	REL-6
>>RB information list	OP	1 to <maxRBperTrCh>		The IE is absent if this TrCh only carries MSCH	REL-6
>>>RB information	MP		MBMS p-		REL-6

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			t-m RB information 10.3.9a.7a		
>>MSCH configuration information	OP		MSCH configuration information 10.3.9a.16	Included if the TrCH carries MSCH	REL-6

10.2.16j MBMS MODIFIED SERVICES INFORMATION

This information is transmitted periodically by UTRAN to inform UEs about a change applicable for one or more MBMS services available in the current cell and possibly in neighbouring cells.

Logical channel: MCCH, DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Modified service list	OP	1.. <maxMBMSservModif>			REL-6
>MBMS Transmission identity	MP		MBMS Transmission identity 10.3.9a.12		REL-6
>MBMS required UE action	MP		Enumerated (None, Acquire counting info, Acquire counting info– PTM RBs unmodified, Acquire PTM RB info, Establish PMM connection, Release PTM RB)	Indicates required UE action upon receiving the message. When sent on the DCCH, only the following values apply: None (FLC), Acquire PTM RB info, Establish PMM connection).	REL-6
>MBMS preferred frequency	OP			Indicates the frequency that UEs shall consider as the preferred frequency layer for cell re-selection during a session for an MBMS service the UE has joined, as specified in [25.304] .	REL-6
>>PFL index	CV-*MCCH*		Integer (1.. <maxMBMS-Freq>)	Index pointing to an entry in the list included in MBMS GENERAL INFORMATION.	REL-6
>>PFL info	CV-*DCCH*		Frequency info 10.3.6.36		REL-6
>Continue MCCH reading	MP		BOOLEAN	MCCH in- band notification. Indicates whether or not the UE should continue reading MCCH in the next modification period. Not applicable when sent on the DCCH	REL-6
MBMS re- aquire MCCH	MP		BOOLEAN		REL-6
MBMS dynamic persistence level	OP		Dynamic persistence level 10.3.6.35		REL-6
End of modified MCCH information	OP		Integer (1..15)	Final TTI including MCCH messages with different content than in the previous modification period	REL-6

Condition	Explanation
MCCH	This IE is mandatory present if the message is sent via MCCH and not needed otherwise.
DCCH	This IE is mandatory present if the message is sent via DCCH and not needed otherwise.

10.2.16k MBMS NEIGHBOURING CELL P-T-M RB INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the p-t-m RB configuration used to in neighbouring cells, indicating the UE may perform selection and/ or soft combining. The message contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Neighbouring cell identity	MP		Integer (1..X)	Assumption is to use a short index eg. pointer to SIB 11/ 12	REL-6
Neighbouring cell's S-CCPCH list	MP	1 to <maxSCCPCH>			REL-6
>Secondary CCPCH info	MP		MBMS Common PhyCh identity 10.3.9a.2	S-CCPCH configuration used in neighbouring cell. Refers to a configuration in the common RB info	REL-6
~~>Rake combinable group id~~	~~OP~~		~~Integer (0..15)~~	~~The IE should only be used in case of FDD. Indicates a group of cells for which Rake combining may be performed~~	~~REL-6~~
>>L1 combining	OP			L2- combining applies if the IE is absent	REL-6
>>CHOICE *mode*	MP				REL-6
>>>FDD					REL-6
~~>>>>Type of L1-combining~~	~~MP~~		~~Enumerated (Rake, Soft)~~	~~In case the IE is set to 'Rake', the current and the neighbouring cell are in the same S-CCPCH cluster, as defined in [29]. Each combining method has different transmission time difference requirements, as specified in [19, 20]~~	~~REL-6~~
>>>>MBMS transmission time difference	MP~~CV-Soft~~		Integer (0..3)	Indicates the time difference between the TTIs on the current and the neighbouring cell's SCCPCH that can be L1-combined	REL-6
>>>>MBMS L1 combining schedule	OP		MBMS L1 combining schedule 10.3.9a.7	If included partial layer 1 ~~(Soft)~~ combining applies, in which case this IE indicates when L1-combining applies. If the IE is absent, L1 combining applies continuously	REL-6
>>>TDD				(no data)	REL-6
>CHOICE L23 configuration	MP				REL-6
>>SameAs Current cell				Apart from the physical channel configuration and the MSCH configuration information, the same configuration as for the indicated S-CCPCH used in the current cell applies	REL-6
>>>Current cell's S-CCPCH	MP		MBMS Current cell S-CCPCH identity 10.3.9a.5	Reference to the S-CCPCH in the current cell with which applies exaclty the same configuration	REL-6
>>>MSCH configuration information	MP		MSCH configuration information 10.3.9a.16		REL-6
>>Different					REL-6
>>>TrCh information for common for all TrCh	MP		MBMS Common CCTrCh identity	Refers to a (TFCS) configuration in the common RB info	REL-6

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.9a.1		
>>>TrCH information	MP	1 to <maxFACHPCH>			REL-6
>>>>TrCh information	MP		MBMS Common TrCh identity 10.3.9a.4	Refers to a (TFS) configuration in the common RB info	REL-6
>>>>TrCh combining status	MP		BOOLEAN	Value TRUE means that TrCh combining is used for this transport channel (TDD only). Note 2.	REL-6
>>>>RB information list	OP	1 to <maxRBperTrCh>		The IE is absent if (temporarily) no RBs corresponding with services provided in the current cell are mapped to this TrCh or if the TrCH only carries MCCH and/ or MSCH	REL-6
>>>>>RB information	MP		MBMS p-t-m RB information 10.3.9a.7a		REL-6
>>>>MSCH configuration information	OP		MSCH configuration information 10.3.9a.16	Included if the TrCH carries MSCH	REL-6

NOTE 1: The signalling supports the option that UTRAN maps one service to L1 combining slots for some neighbours and to the L2 combining slots for other neighbours ie. the use of different combining schemes for different neighbours

NOTE 2: Transport combining can only be indicated when the complete L2 configuration is provided for the neighbouring cell (i.e. using L2 configuration choice “different”). Fortunately, a scenario in which the neighbouring cell configuration is different from the current cell is regarded as the typical scenario for using transport combining.

~~Condition~~	~~Explanation~~
~~*Soft*~~	~~This IE is mandatory present if the IE "Type of L1 combining" is included and set to 'soft' and not needed otherwise.~~

<Cut untl the next modification>

10.3.7.43a MBMS preferred frequency information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
MBMS preferred frequency list	OP	1 to < maxMBMS-Freq>			REL-6
>MBMS preferred frequency	MP		Integer(0 .. <maxMBMS-Freq>-1)	Value n corresponds with the (n+1)th frequency included in the IE New inter-frequency cells that is specified within SIB 11	REL-6
>CHOICE Layer convergence information	MP				REL-6
>>Qoffmbms	MP		Integer (0..7)	The offset added to cells on this MBMS preferred frequency The mapping to actual values is FFS	REL-6
>>HCS_OFF$_{mbms}$	MP		Integer (0..7)	Offset added to the normal HCS priority level of cells on this MBMS preferred frequency	REL-6
MBMS PL Service Restriction Information	OP		Enumerated (TRUE)	Included if some service restrictions apply for this preferred frequency e.g. congestion	REL-6

10.3.9a.7 MBMS L1 combining schedule

Includes information about the MBMS L1 combining schedule.

Information element/Group name	Need	Multi	Type and reference	Semantics description	Version
MBMS L1 combining cycle length	MP~~D~~		Enumerated (32, 64, 128, 256, 512, 1024)	In number of radio frames ~~Default value is the value included in the MBMS GENERAL INFORMATION message~~	REL-6
MBMS L1 combining cycle offset	MD		Integer (0.. MBMS L1 combining cycle length - 4) by step of 4	Start of the L1 combining cycle (relative to the timing of the current cell) in number of radio frames. Default value is no offset	REL-6
MTCH L1- combining period list	MP	1 to < maxMBMS-L1CP>		One or more periods in which L1 combining is performed	REL-6
>Start	MP		Integer (0.. MBMS L1 combining cycle length - 4) by step of 4	Number of frames from the end of the previous combining period or the start of the cycle (for the first period)	REL-6
>Duration	MP		Integer (4.. MBMS L1 combining cycle length) by step of 4	Number of frames (see note)	REL-6

NOTE: The MTCH L1- combining period should indicate one or more complete TTIs.

10.3.9a.10 MBMS Short transmission identity

Includes a short identity of the MBMS transmission identity, which concerns a session of a specific service.

Information element/Group name	Need	Multi	Type and reference	Semantics description	Version
MBMS short transmission identity	MP		Integer (1..~~32~~ maxMBMSservUnmodif)	Reference/ index to a transmission listed in the MBMS MODIFIED SERVICES INFORMATION or MBMS UNMODIFIED SERVICES INFORMATION	REL-6

10.3.9a.13 MCCH configuration information

Includes information about the MCCH configuration.

Information element/Group name	Need	Multi	Type and reference	Semantics description	Version
Access Info Period coefficient	MP~~D~~		Integer (0..3)	Represents a, the access information coefficient. The number of repetitions per modification period equals 2^a while the actual access information period, in number of frames, equals MP DIV 2^a	REL-6
Repetition Period coefficient	MP		Integer (0..3)	Represents r, the repetition period coefficient. The number of repetitions per modification period equals 2^r while the actual repetition period, in number of frames, equals MP DIV 2^r	REL-6
Modification period coefficient	MP		Integer (7..10)	Represents m, the modification period coefficient. The actual modification period, in number of frames, equals 2^m	REL-6
RLC info	MP		RLC info 10.3.4.23		REL-6
TCTF presence	CV-rel6		Enumerated (false)	By default the TCTF is present even though the FACH only carries one logical channel (type). When this IE is included, the TCTF is absent	REL-6

Condition	Explanation
rel6	This IE is not needed if the IE is contained within the IE “Secondary CCPCH system information”, otherwise the IE is optional.

10.3.10 Multiplicity values and type constraint values

The following table includes constants that are either used as multi bounds (name starting with "max") or as high or low value in a type specification (name starting with "lo" or "hi"). Constants are specified only for values appearing more than once in the RRC specification. In case a constant is related to one or more other constants, an expression is included in the "value" column instead of the actual value.

Constant	Explanation	Value	Version
NOTE: Only the relevant constants are shown			
MBMS information			
maxMBMS-CommonCCTrCh	Maximum number of CCTrCh configurations included in the MBMS COMMON P-T-M RB INFORMATION message	32	REL-6
maxMBMS-CommonPhyCh	Maximum number of PhyCh configurations included in the MBMS COMMON P-T-M RB INFORMATION message	32	REL-6
maxMBMS-CommonRB	Maximum number of RB configurations included in the MBMS COMMON P-T-M RB INFORMATION message	32	REL-6
maxMBMS-CommonTrCh	Maximum number of TrCh configurations included in the MBMS COMMON P-T-M RB INFORMATION message	32	REL-6
maxMBMS-Freq	Maximum number of MBMS preferred frequencies	4	REL-6
maxMBMS-L1CP	Maximum number of periods in which layer 1 combining applies	4	REL-6
maxMBMSservCount	Maximum number of MBMS services in a Access Info message	~~4~~8	REL-6
maxMBMSservDedic	Maximum number of MBMS services in a dedicated notification/ Paging type 2 message	4	REL-6
maxMBMSservModif	Maximum number of MBMS services in a MBMS MODIFIED SERVICES INFORMATION message	~~4~~32	REL-6
maxMBMSservSched	Maximum number of MBMS services in a MBMS SCHEDULING INFORMATION message	16	REL-6
maxMBMSservUnmodif	Maximum number of MBMS services in a MBMS UNMODIFIED SERVICES INFORMATION message	~~32~~64	REL-6
maxMBMSTransmis	Maximum number of transmissions for which scheduling information is provided within a scheduling period	4	REL-6

11.2 PDU definitions

```
--**************************************************************
--
-- TABULAR: The message type and integrity check info are not
-- visible in this module as they are defined in the class module.
-- Also, all FDD/TDD specific choices have the FDD option first
-- and TDD second, just for consistency.
--
--**************************************************************

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

--**************************************************************
--
-- IE parameter types from other modules
--
--**************************************************************

IMPORTS

-- Core Network IEs :
    CN-DomainIdentity,
    CN-InformationInfo,
    CN-InformationInfoFull,
    NAS-Message,
    PagingRecordTypeID,
    PLMN-Identity,
-- UTRAN Mobility IEs :
    CellIdentity,
    CellIdentity-PerRL-List,
    URA-Identity,
-- User Equipment IEs :
    UE-RadioAccessCapabBandFDDList2,
    UE-RadioAccessCapabBandFDDList-ext,
    AccessStratumReleaseIndicator,
    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CapabilityUpdateRequirement-r4,
    CapabilityUpdateRequirement-r4-ext,
    CapabilityUpdateRequirement-r5,
    CellUpdateCause,
    CellUpdateCause-ext,
    CipheringAlgorithm,
    CipheringModeInfo,
    DSCH-RNTI,
    E-RNTI,
    EstablishmentCause,
    FailureCauseWithProtErr,
    FailureCauseWithProtErrTrId,
    GroupReleaseInformation,
    H-RNTI,
    UESpecificBehaviourInformation1idle,
    UESpecificBehaviourInformation1interRAT,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    N-308,
    PagingCause,
    PagingRecordList,
    PagingRecord2List-r5,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithMoreInfo,
    RadioFrequencyBandTDDList,
    Rb-timer-indicator,
    RedirectionInfo,
    RedirectionInfo-r6,
    RejectionCause,
    ReleaseCause,
    RF-CapabilityComp,
    RRC-StateIndicator,
    RRC-TransactionIdentifier,
    SecurityCapability,
    START-Value,
```

```
    STARTList,
    SystemSpecificCapUpdateReq-v590ext,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    UE-RadioAccessCapability-v370ext,
    UE-RadioAccessCapability-v380ext,
    UE-RadioAccessCapability-v3a0ext,
    UE-RadioAccessCapability-v3g0ext,
    UE-RadioAccessCapability-v4b0ext,
    UE-RadioAccessCapability-v590ext,
    UE-RadioAccessCapability-v5c0ext,
    UE-RadioAccessCapability-v650ext,
    UE-RadioAccessCapabilityComp,
    DL-PhysChCapabilityFDD-v380ext,
    UE-ConnTimersAndConstants,
    UE-ConnTimersAndConstants-v3a0ext,
    UE-ConnTimersAndConstants-r5,
    UE-SecurityInformation,
    URA-UpdateCause,
    UTRAN-DRX-CycleLengthCoefficient,
    WaitTime,
-- Radio Bearer IEs :
    DefaultConfigIdentity,
    DefaultConfigIdentity-r4,
    DefaultConfigIdentity-r5,
    DefaultConfigMode,
    DL-CounterSynchronisationInfo,
    DL-CounterSynchronisationInfo-r5,
    PredefinedConfigIdentity,
    PredefinedConfigStatusList,
    PredefinedConfigStatusListComp,
    PredefinedConfigSetWithDifferentValueTag,
    RAB-Info,
    RAB-Info-Post,
    RAB-InformationList,
    RAB-InformationReconfigList,
    RAB-InformationSetupList,
    RAB-InformationSetupList-r4,
    RAB-InformationSetupList-r5,
    RAB-InformationSetupList-r6-ext,
    RAB-InformationSetupList-r6,
    RB-ActivationTimeInfoList,
    RB-COUNT-C-InformationList,
    RB-COUNT-C-MSB-InformationList,
    RB-IdentityList,
    RB-InformationAffectedList,
    RB-InformationAffectedList-r5,
    RB-InformationAffectedList-r6,
    RB-InformationReconfigList,
    RB-InformationReconfigList-r4,
    RB-InformationReconfigList-r5,
    RB-InformationReconfigList-r6,
    RB-InformationReleaseList,
    RB-PDCPContextRelocationList,
    SRB-InformationSetupList,
    SRB-InformationSetupList-r5,
    SRB-InformationSetupList-r6,
    SRB-InformationSetupList2,
    UL-CounterSynchronisationInfo,
-- Transport Channel IEs:
    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
    DL-AddReconfTransChInfoList,
    DL-AddReconfTransChInfoList-r4,
    DL-AddReconfTransChInfoList-r5,
    DL-CommonTransChInfo,
    DL-CommonTransChInfo-r4,
    DL-DeletedTransChInfoList,
    DL-DeletedTransChInfoList-r5,
    DRAC-StaticInformationList,
    TFC-Subset,
    TFCS-Identity,
    UL-AddReconfTransChInfoList,
    UL-AddReconfTransChInfoList-r6,
    UL-CommonTransChInfo,
    UL-CommonTransChInfo-r4,
    UL-DeletedTransChInfoList,
```

```
    UL-DeletedTransChInfoList-r6,
-- Physical Channel IEs :
    Alpha,
    BEACON-PL-Est,
    CCTrCH-PowerControlInfo,
    CCTrCH-PowerControlInfo-r4,
    CCTrCH-PowerControlInfo-r5,
    ConstantValue,
    ConstantValueTdd,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-CommonInformation-r4,
    DL-CommonInformation-r5,
    DL-CommonInformation-r6,
    DL-CommonInformationPost,
    DL-HSPDSCH-Information,
    DL-InformationPerRL-List,
    DL-InformationPerRL-List-r4,
    DL-InformationPerRL-List-r5,
    DL-InformationPerRL-List-r5bis,
    DL-InformationPerRL-List-r6,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-InformationPerRL-PostTDD-LCR-r4,
    DL-PDSCH-Information,
    DL-TPC-PowerOffsetPerRL-List,
    DPC-Mode,
    DPCH-CompressedModeStatusInfo,
    DynamicPersistenceLevel,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    HARQ-Preamble-Mode,
    HS-SICH-Power-Control-Info-TDD384,
    MaxAllowedUL-TX-Power,
    OpenLoopPowerControl-IPDL-TDD-r4,
    PDSCH-CapacityAllocationInfo,
    PDSCH-CapacityAllocationInfo-r4,
    PDSCH-Identity,
    PrimaryCPICH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-CapacityAllocationInfo-r4,
    PUSCH-Identity,
    PUSCH-SysInfoList-HCR-r5,
    PDSCH-SysInfoList-HCR-r5,
    RL-AdditionInformationList,
    RL-AdditionInformationList-r6,
    RL-RemovalInformationList,
    SpecialBurstScheduling,
    SSDT-Information,
    SSDT-Information-r4,
    TFC-ControlDuration,
    SSDT-UL,
    TimeslotList,
    TimeslotList-r4,
    TX-DiversityMode,
    UL-ChannelRequirement,
    UL-ChannelRequirement-r4,
    UL-ChannelRequirement-r5,
    UL-ChannelRequirement-r6,
    UL-ChannelRequirementWithCPCH-SetID,
    UL-ChannelRequirementWithCPCH-SetID-r4,
    UL-ChannelRequirementWithCPCH-SetID-r5,
    UL-ChannelRequirementWithCPCH-SetID-r6,
    UL-DPCH-Info,
    UL-DPCH-Info-r4,
    UL-DPCH-Info-r5,
    UL-DPCH-Info-r6,
    UL-DPCH-InfoPostFDD,
    UL-DPCH-InfoPostTDD,
    UL-DPCH-InfoPostTDD-LCR-r4,
    UL-EDCH-Information-r6,
    UL-SynchronisationParameters-r4,
    UL-TimingAdvance,
    UL-TimingAdvanceControl,
    UL-TimingAdvanceControl-r4,
-- Measurement IEs :
```

```
    AdditionalMeasurementID-List,
    DeltaRSCP,
    Frequency-Band,
    EventResults,
    Inter-FreqEventCriteriaList-v590ext,
    Intra-FreqEventCriteriaList-v590ext,
    IntraFreqReportingCriteria-1b-r5,
    IntraFreqEvent-1d-r5,
    InterFreqEventResults-LCR-r4-ext,
    InterRATCellInfoIndicator,
    InterRAT-TargetCellDescription,
    MeasuredResults,
    MeasuredResults-v390ext,
    MeasuredResults-v590ext,
    MeasuredResultsList,
    MeasuredResultsList-LCR-r4-ext,
    MeasuredResultsOnRACH,
    MeasurementCommand,
    MeasurementCommand-r4,
    MeasurementIdentity,
    MeasurementReportingMode,
    PrimaryCCPCH-RSCP,
    SFN-Offset-Validity,
    TimeslotListWithISCP,
    TrafficVolumeMeasuredResultsList,
    UE-Positioning-GPS-AssistanceData,
    UE-Positioning-Measurement-v390ext,
    UE-Positioning-OTDOA-AssistanceData,
    UE-Positioning-OTDOA-AssistanceData-r4ext,
    UE-Positioning-OTDOA-AssistanceData-UEB,
-- Other IEs :
    BCCH-ModificationInfo,
    CDMA2000-MessageList,
    GSM-TargetCellInfoList,
    GERANIu-MessageList,
    GERAN-SystemInformation,
    GSM-MessageList,
    InterRAT-ChangeFailureCause,
    InterRAT-HO-FailureCause,
    InterRAT-UE-RadioAccessCapabilityList,
    InterRAT-UE-RadioAccessCapability-v590ext,
    InterRAT-UE-SecurityCapList,
    IntraDomainNasNodeSelector,
    ProtocolErrorMoreInformation,
    Rplmn-Information,
    Rplmn-Information-r4,
    SegCount,
    SegmentIndex,
    SFN-Prime,
    SIB-Data-fixed,
    SIB-Data-variable,
    SIB-Type,
-- MBMS IEs:
    MBMS-CellGroupIdentity-r6,
    MBMS-CommonRBInformationList-r6,
    MBMS-CurrentCell-SCCPCHList-r6,
    MBMS-JoinedInformation-r6,
    MBMS-MICHConfigurationInfo-r6,
    MBMS-ModifedServiceList-r6,
    MBMS-MSCHConfigurationInfo-r6,
    MBMS-NeighbouringCellSCCPCHList-r6,
    MBMS-PhyChInformationList-r6,
    MBMS-PL-ServiceRestrictInfo-r6,
    MBMS-PreferredFreqRequest-r6,
    MBMS-PreferredFrequencyList-r6,
    MBMS-ServiceAccessInfoList-r6,
    MBMS-ServiceSchedulingInfoList-r6,
    MBMS-SIBType5-SCCPCHList-r6,
    MBMS-TimersAndCouneters-r6,
    MBMS-TranspChInfoForEachCCTrCh-r6,
    MBMS-TranspChInfoForEachTrCh-r6,
    MBMS-UnmodifiedServiceList-r6
FROM InformationElements

    maxSIBperMsg,
    maxURNTI-Group
FROM Constant-definitions;

-- **************************************************
```

```
--
-- CELL UPDATE CONFIRM
--
-- ************************************************

CellUpdateConfirm ::= CHOICE {
    r3                              SEQUENCE {
        cellUpdateConfirm-r3            CellUpdateConfirm-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            cellUpdateConfirm-v3a0ext       CellUpdateConfirm-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                cellUpdateConfirm-r3-add-ext    BIT STRING  OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    cellUpdateConfirm-v4b0ext       CellUpdateConfirm-v4b0ext-IEs,
                    v590NonCriticalExtenstions      SEQUENCE {
                        cellUpdateConfirm-v590ext       CellUpdateConfirm-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            cellUpdateConfirm-v6xyext       CellUpdateConfirm-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {} OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                cellUpdateConfirm-r4            CellUpdateConfirm-r4-IEs,
                v4d0NonCriticalExtensions       SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    cellUpdateConfirm-r4-add-ext    BIT STRING      OPTIONAL,
                    v590NonCriticalExtenstions      SEQUENCE {
                        cellUpdateConfirm-v590ext       CellUpdateConfirm-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            cellUpdateConfirm-v6xyext       CellUpdateConfirm-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    cellUpdateConfirm-r5            CellUpdateConfirm-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    cellUpdateConfirm-r5-add-ext    BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        cellUpdateConfirm-v6xyext       CellUpdateConfirm-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions              CHOICE {
                    r6                              SEQUENCE {
                        cellUpdateConfirm-r6            CellUpdateConfirm-r6-IEs,
                        -- Container for adding non critical extensions after freezing REL-7
                        cellUpdateConfirm-r6-add-ext    BIT STRING      OPTIONAL,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    },
                    criticalExtensions              SEQUENCE {}
                }
            }
        }
    }
}

CellUpdateConfirm-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
```

```
        rlc-Re-establishIndicatorRb5orAbove     BOOLEAN,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList          OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

CellUpdateConfirm-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI               DSCH-RNTI                               OPTIONAL
}

CellUpdateConfirm-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                      SSDT-UL                                 OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List              CellIdentity-PerRL-List             OPTIONAL
}

CellUpdateConfirm-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

CellUpdateConfirm-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove BOOLEAN,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList-r4       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
```

```
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

CellUpdateConfirm-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove BOOLEAN,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList-r5       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r5       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}
```

```
CellUpdateConfirm-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove     BOOLEAN,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList-r6       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r6       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList-r6        OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

CellUpdateConfirm-v6xyext-IEs ::=   SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity           PLMN-Identity                       OPTIONAL,
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode                  OPTIONAL,
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

-- **************************************************
--
-- PHYSICAL CHANNEL RECONFIGURATION
--
-- **************************************************

PhysicalChannelReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        physicalChannelReconfiguration-r3
                                        PhysicalChannelReconfiguration-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            physicalChannelReconfiguration-v3a0ext      PhysicalChannelReconfiguration-v3a0ext,
```

```
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                physicalChannelReconfiguration-r3-add-ext           BIT STRING      OPTIONAL,
                v4b0NonCriticalExtenstions          SEQUENCE {
                    physicalChannelReconfiguration-v4b0ext
                                                PhysicalChannelReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtenstions          SEQUENCE {
                        physicalChannelReconfiguration-v590ext
                                                PhysicalChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            physicalChannelReconfiguration-v6xyext
                                                PhysicalChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions                   SEQUENCE {} OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
            criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                physicalChannelReconfiguration-r4
                                                PhysicalChannelReconfiguration-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    physicalChannelReconfiguration-r4-add-ext       BIT STRING      OPTIONAL,
                    v590NonCriticalExtenstions          SEQUENCE {
                        physicalChannelReconfiguration-v590ext
                                                PhysicalChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            physicalChannelReconfiguration-v6xyext
                                                PhysicalChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    physicalChannelReconfiguration-r5
                                                PhysicalChannelReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    physicalChannelReconfiguration-r5-add-ext       BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        physicalChannelReconfiguration-v6xyext
                                                PhysicalChannelReconfiguration-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions              CHOICE {
                    r6                              SEQUENCE {
                        physicalChannelReconfiguration-r6
                                                PhysicalChannelReconfiguration-r6-IEs,
                        -- Container for adding non critical extensions after freezing REL-7
                        physicalChannelReconfiguration-r6-add-ext       BIT STRING      OPTIONAL,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    },
                    criticalExtensions              SEQUENCE {}
                }
            }
        }
    }
}

PhysicalChannelReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
```

```
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                            OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                           OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power                   OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID     OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                    OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List                OPTIONAL
}

PhysicalChannelReconfiguration-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL
}

PhysicalChannelReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                      SSDT-UL                                 OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List              CellIdentity-PerRL-List                 OPTIONAL
}

PhysicalChannelReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

PhysicalChannelReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r4 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID-r4  OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

PhysicalChannelReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
```

```
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r5 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID-r5  OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}

PhysicalChannelReconfiguration-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        plmn-Identity                   PLMN-Identity                       OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r6 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID-r6  OPTIONAL,
        ul-EDCH-Information              UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

PhysicalChannelReconfiguration-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity           PLMN-Identity                       OPTIONAL,
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode                  OPTIONAL,
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

-- **************************************************
--
```

```
-- RADIO BEARER RECONFIGURATION
--
-- **********************************************

RadioBearerReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerReconfiguration-r3   RadioBearerReconfiguration-r3-IEs,
        -- Prefix "v3ao" is used (in one instance) to keep alignment with R99
        v3aoNonCriticalExtensions       SEQUENCE {
            radioBearerReconfiguration-v3a0ext  RadioBearerReconfiguration-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerReconfiguration-r3-add-ext       BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions           SEQUENCE {
                    radioBearerReconfiguration-v4b0ext
                                                    RadioBearerReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtensions           SEQUENCE {
                        radioBearerReconfiguration-v590ext
                                                        RadioBearerReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerReconfiguration-v6xyext
                                                            RadioBearerReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {} OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                radioBearerReconfiguration-r4   RadioBearerReconfiguration-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    radioBearerReconfiguration-r4-add-ext       BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions           SEQUENCE {
                        radioBearerReconfiguration-v590ext
                                                        RadioBearerReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerReconfiguration-v6xyext
                                                            RadioBearerReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                                  SEQUENCE {
                    radioBearerReconfiguration-r5       RadioBearerReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    radioBearerReconfiguration-r5-add-ext       BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        radioBearerReconfiguration-v6xyext
                                                        RadioBearerReconfiguration-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions              CHOICE {
                    r6                                  SEQUENCE {
                        radioBearerReconfiguration-r6       RadioBearerReconfiguration-r6-IEs,
                        -- Container for adding non critical extensions after freezing REL-7
                        radioBearerReconfiguration-r6-add-ext       BIT STRING      OPTIONAL,
                        nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                    },
                    criticalExtensions              SEQUENCE {}
                }
            }
        }
    }
}

RadioBearerReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
```

```
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        -- NOTE: IE rb-InformationReconfigList should be optional in later versions
        -- of this message
        rb-InformationReconfigList      RB-InformationReconfigList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfo2List        OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        -- NOTE: IE dl-InformationPerRL-List should be optional in later versions
        -- of this message
        dl-InformationPerRL-List        DL-InformationPerRL-List
}

RadioBearerReconfiguration-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL
}

RadioBearerReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                      SSDT-UL                                 OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List              CellIdentity-PerRL-List             OPTIONAL
}

RadioBearerReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

RadioBearerReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
```

```
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList-r4       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

RadioBearerReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
            -- Radio bearer IEs
                rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
                rb-InformationReconfigList      RB-InformationReconfigList-r5       OPTIONAL,
                rb-InformationAffectedList      RB-InformationAffectedList-r5       OPTIONAL,
                rb-PDCPContextRelocationList    RB-PDCPContextRelocationList        OPTIONAL,
            -- Transport channel IEs
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
                ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
                modeSpecificTransChInfo         CHOICE {
                    fdd                             SEQUENCE {
                        cpch-SetID                      CPCH-SetID                  OPTIONAL,
                        addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
                    },
                    tdd                             NULL
                }                                                                   OPTIONAL,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
                dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL
            },
            preconfiguration                SEQUENCE {
            -- All IEs that include an FDD/TDD choice are split in two IEs for this message,
            -- one for the FDD only elements and one for the TDD only elements, so that one
            -- FDD/TDD choice in this level is sufficient.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
```

```
                        defaultConfigIdentity           DefaultConfigIdentity-r5
                    }
                }
            }
        },
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}

RadioBearerReconfiguration-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        plmn-Identity                   PLMN-Identity                       OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
            -- Radio bearer IEs
                rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
                rb-InformationReconfigList      RB-InformationReconfigList-r6       OPTIONAL,
                rb-InformationAffectedList      RB-InformationAffectedList-r6       OPTIONAL,
                rb-PDCPContextRelocationList    RB-PDCPContextRelocationList        OPTIONAL,
            -- Transport channel IEs
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
                ul-deletedTransChInfoList       UL-DeletedTransChInfoList-r6        OPTIONAL,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
                modeSpecificTransChInfo         CHOICE {
                    fdd                             SEQUENCE {
                        cpch-SetID                      CPCH-SetID                  OPTIONAL,
                        addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
                    },
                    tdd                             NULL
                }                                                                   OPTIONAL,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
                dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL
            },
            preconfiguration                SEQUENCE {
            -- All IEs that include an FDD/TDD choice are split in two IEs for this message,
            -- one for the FDD only elements and one for the TDD only elements, so that one
            -- FDD/TDD choice in this level is sufficient.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity-r5
                    }
                }
            }
        },
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
```

```
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

RadioBearerReconfiguration-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity           PLMN-Identity                       OPTIONAL,
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode                  OPTIONAL,
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

-- **************************************************
--
-- RADIO BEARER RELEASE
--
-- **************************************************

RadioBearerRelease ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerRelease-r3           RadioBearerRelease-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            radioBearerRelease-v3a0ext      RadioBearerRelease-v3a0ext,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            radioBearerRelease-r3-add-ext       BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    radioBearerRelease-v4b0ext      RadioBearerRelease-v4b0ext-IEs,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerRelease-v590ext      RadioBearerRelease-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerRelease-v6xyext      RadioBearerRelease-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {} OPTIONAL
                        }       OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                radioBearerRelease-r4           RadioBearerRelease-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    radioBearerRelease-r4-add-ext       BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerRelease-v590ext      RadioBearerRelease-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerRelease-v6xyext      RadioBearerRelease-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    radioBearerRelease-r5           RadioBearerRelease-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    radioBearerRelease-r5-add-ext   BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        radioBearerRelease-v6xyext      RadioBearerRelease-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions              CHOICE {
```

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                    r6                              SEQUENCE {
                        radioBearerRelease-r6           RadioBearerRelease-r6-IEs,
                        -- Container for adding non critical extensions after freezing REL-7
                        radioBearerRelease-r6-add-ext   BIT STRING      OPTIONAL,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    },
                    criticalExtensions              SEQUENCE {}
                }
            }
        }
    }
}

RadioBearerRelease-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        signallingConnectionRelIndication   CN-DomainIdentity               OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfo2List        OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

RadioBearerRelease-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL
}

RadioBearerRelease-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- IE ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                      SSDT-UL                                 OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        --  in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List              CellIdentity-PerRL-List                 OPTIONAL
}

RadioBearerRelease-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
```

```
}

RadioBearerRelease-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        signallingConnectionRelIndication   CN-DomainIdentity               OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

RadioBearerRelease-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        signallingConnectionRelIndication   CN-DomainIdentity               OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList,
        rb-InformationAffectedList      RB-InformationAffectedList-r5       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
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                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}

RadioBearerRelease-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity           PLMN-Identity                       OPTIONAL,
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode                  OPTIONAL,
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL,
        mbms-RB-ListReleasedToChangeTransferMode
                                        RB-InformationReleaseList           OPTIONAL
}

RadioBearerRelease-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        plmn-Identity                   PLMN-Identity                       OPTIONAL,
        signallingConnectionRelIndication   CN-DomainIdentity               OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList,
        rb-InformationAffectedList      RB-InformationAffectedList-r6       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList-r6        OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
```

```
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL,
        mbms-RB-ListReleasedToChangeTransferMode
                                        RB-InformationReleaseList           OPTIONAL
}

-- **************************************************
--
-- RADIO BEARER SETUP
--
-- **************************************************

RadioBearerSetup ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerSetup-r3             RadioBearerSetup-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            radioBearerSetup-v3a0ext        RadioBearerSetup-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerSetup-r3-add-ext     BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    radioBearerSetup-v4b0ext        RadioBearerSetup-v4b0ext-IEs,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerSetup-v590ext        RadioBearerSetup-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerSetup-v6xyext        RadioBearerSetup-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {} OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                radioBearerSetup-r4             RadioBearerSetup-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    radioBearerSetup-r4-add-ext     BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerSetup-v590ext        RadioBearerSetup-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerSetup-v6xyext        RadioBearerSetup-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    radioBearerSetup-r5             RadioBearerSetup-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    radioBearerSetup-r5-add-ext     BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        radioBearerSetup-v6xyext        RadioBearerSetup-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions              CHOICE {
                    r6                              SEQUENCE {
                        radioBearerSetup-r6             RadioBearerSetup-r6-IEs,
                        -- Container for adding non critical extensions after freezing REL-7
                        radioBearerSetup-r6-add-ext     BIT STRING      OPTIONAL,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    },
                    criticalExtensions              SEQUENCE {}
                }
            }
        }
```

```
    }
}

RadioBearerSetup-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

RadioBearerSetup-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL
}

RadioBearerSetup-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                      SSDT-UL                                 OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List              CellIdentity-PerRL-List                 OPTIONAL
}

RadioBearerSetup-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

RadioBearerSetup-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
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        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList-r4         OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

RadioBearerSetup-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList-r5         OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList-r5         OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r5       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
```

```
                dl-PDSCH-Information             DL-PDSCH-Information        OPTIONAL
            },
            tdd                                 NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}

RadioBearerSetup-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity           PLMN-Identity                       OPTIONAL,
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode                  OPTIONAL,
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL,
    -- Radio bearer IEs
        rab-InformationSetupList        RAB-InformationSetupList-r6-ext     OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

RadioBearerSetup-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        plmn-Identity                   PLMN-Identity                       OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList-r6         OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList-r6         OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r6       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList-r6        OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

-- **************************************************
--
-- TRANSPORT CHANNEL RECONFIGURATION
```

```
--
-- **************************************************

TransportChannelReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        transportChannelReconfiguration-r3
                                        TransportChannelReconfiguration-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            transportChannelReconfiguration-v3a0ext
                                            TransportChannelReconfiguration-v3a0ext,
            laterNonCriticalExtensions          SEQUENCE {
                -- Container for additional R99 extensions
                transportChannelReconfiguration-r3-add-ext      BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    transportChannelReconfiguration-v4b0ext
                                                    TransportChannelReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtensions       SEQUENCE {
                        transportChannelReconfiguration-v590ext
                                                        TransportChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            transportChannelReconfiguration-v6xyext
                                                        TransportChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                transportChannelReconfiguration-r4
                                                TransportChannelReconfiguration-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    transportChannelReconfiguration-r4-add-ext      BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions       SEQUENCE {
                        transportChannelReconfiguration-v590ext
                                                        TransportChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            transportChannelReconfiguration-v6xyext
                                                        TransportChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    transportChannelReconfiguration-r5
                                                    TransportChannelReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    transportChannelReconfiguration-r5-add-ext      BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        transportChannelReconfiguration-v6xyext
                                                        TransportChannelReconfiguration-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions              CHOICE {
                    r6                              SEQUENCE {
                        transportChannelReconfiguration-r6
                                                        TransportChannelReconfiguration-r6-IEs,
                        -- Container for adding non critical extensions after freezing REL-7
                        transportChannelReconfiguration-r6-add-ext      BIT STRING      OPTIONAL,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    },
                    criticalExtensions              SEQUENCE {}
                }
            }
        }
    }
}

TransportChannelReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
```

```
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

TransportChannelReconfiguration-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL
}

TransportChannelReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                      SSDT-UL                                 OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List              CellIdentity-PerRL-List                 OPTIONAL
}

TransportChannelReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

TransportChannelReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
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```
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

TransportChannelReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}

TransportChannelReconfiguration-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity           PLMN-Identity                       OPTIONAL,
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode                  OPTIONAL,
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

TransportChannelReconfiguration-r6-IEs ::= SEQUENCE {
```

```
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        plmn-Identity                   PLMN-Identity                       OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}


-- **************************************************
--
-- MBMS MODIFIED SERVICES INFORMATION
--
-- **************************************************

MBMSModifiedServicesInformation ::= SEQUENCE {
    -- MBMS Modified Services Information IEs
        modifedServiceList              MBMS-ModifedServiceList-r6          OPTIONAL,
        mbms-ReacquireMCCH              BOOLEAN,
        mbms-DynamicPersistenceLevel    DynamicPersistenceLevel             OPTIONAL,
        endOfModifiedMCCHInformation    INTEGER (1..15)                     OPTIONAL,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}
```

11.3 Information element definitions

```
-- **************************************************
--
--     MBMS INFORMATION ELEMENTS (10.3.9a)
--
-- **************************************************
```

<Cut untl the next modification>

```
MBMS-NeighbouringCellSCCPCH-r6 ::=  SEQUENCE {
```

```
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    rakeCombinableGroupId               MBMS-RakeCombinableGroupId          OPTIONAL,
    layer1Combining                     CHOICE {
        fdd                                 SEQUENCE {
            typeOfL1Combining                   MBMS-TypeOfL1Combining,
            mbms-L1CombiningTransmTimeDiff      MBMS-L1CombiningTransmTimeDiff,
            mbms-L1CombiningSchedule            MBMS-L1CombiningSchedule    OPTIONAL
        },
        tdd                                 NULL
    }       OPTIONAL,
    mbms-L23Configuration               MBMS-L23Configuration
}

MBMS-NeighbouringCellSCCPCHList-r6 ::= SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                    MBMS-NeighbouringCellSCCPCH-r6

MBMS-NI-CountPerFrame ::=           ENUMERATED { ni18, ni36, ni72, ni144 }

MBMS-PFLIndex ::=                   INTEGER (1..maxMBMS-Freq)

MBMS-PFLInfo ::=                    FrequencyInfo

MBMS-PhyChInformation-r6 ::=        SEQUENCE {
    mbms-CommonPhyChIdentity            MBMS-CommonPhyChIdentity,
    secondaryCCPCHInfo-MBMS             SecondaryCCPCHInfo-MBMS-r6
}

MBMS-PhyChInformationList-r6 ::=    SEQUENCE (SIZE (1..maxMBMS-CommonPhyCh)) OF
                                    MBMS-PhyChInformation-r6

MBMS-PL-ServiceRestrictInfo-r6 ::=  ENUMERATED { true }

MBMS-PreferredFreqRequest-r6 ::=    SEQUENCE {
    preferredFreqRequest                FrequencyInfo
}

MBMS-PreferredFrequencyInfo-r6 ::=  SEQUENCE {
    mbmsPreferredFrequency              INTEGER (1..maxMBMS-Freq),
    layerConvergenceInformation         CHOICE {
        mbms-Qoffset                        INTEGER (0..7),
        mbms-HCSoffset                      INTEGER (0..7)
    },
    mbms-PL-ServiceRestrictInfo         MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

MBMS-PreferredFrequencyList-r6 ::=  SEQUENCE (SIZE (1..maxMBMS-Freq)) OF
                                    MBMS-PreferredFrequencyInfo-r6

MBMS-PTM-RBInformation-C ::=        SEQUENCE {
    rbInformation                       MBMS-CommonRBIdentity,
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity
}

MBMS-PTM-RBInformation-CList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                    MBMS-PTM-RBInformation-C

MBMS-PTM-RBInformation-N ::=        SEQUENCE {
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity,
    layer1-CombiningStatus              ENUMERATED { true }                 OPTIONAL
}

MBMS-PTM-RBInformation-NList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                    MBMS-PTM-RBInformation-N

MBMS-PTM-RBInformation-S ::=        SEQUENCE {
    rbInformation                       MBMS-CommonRBIdentity,
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity
}

MBMS-PTM-RBInformation-SList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                    MBMS-PTM-RBInformation-S

MBMS-RakeCombinableGroupId ::=      INTEGER (0..15)

MBMS-RequiredUEAction-Mod ::=       ENUMERATED {
```

```
                                    none,
                                    acquireCountingInfo,
                                    acquireCountingInfoPTM-RBsUnmodified,
                                    acquirePTM-RBInfo,
                                    establishPMMConnection,
                                    releasePTM-RB }

MBMS-RequiredUEAction-UMod ::=      ENUMERATED {
                                    none,
                                    acquirePTM-RBInfo,
                                    establishPMMConnection }

MBMS-SCCPCHIdentity ::=             INTEGER (1..maxSCCPCH)

MBMS-ServiceAccessInfo-r6 ::=       SEQUENCE {
    shortTransmissionID                 MBMS-ShortTransmissionID,
    accessprobabilityFactor-Idle        MBMS-AccessProbabilityFactor,
    accessprobabilityFactor-UraPCH      MBMS-AccessProbabilityFactor        OPTIONAL
}

MBMS-ServiceAccessInfoList-r6 ::=   SEQUENCE (SIZE (1..maxMBMSservCount)) OF
                                    MBMS-ServiceAccessInfo-r6

MBMS-ServiceIdentity ::=            SEQUENCE {
    serviceIdentity                     OCTET STRING (SIZE (3)),
    plmn-Identity                       CHOICE {
        -- The 'sameAsMIB-PLMN-Id' choice refers to the 'PLMN Identity' (R99) in MIB.
        sameAsMIB-PLMN-Id                   NULL,
        other                               CHOICE {
            -- The 'sameAsMIB-MultiPLMN-Id' choice refers to one of the (1..5) PLMN Identities
            -- provided in the 'Multiple PLMN List' (REL-6) in MIB.
            sameAsMIB-MultiPLMN-Id              INTEGER (1..5),
            explicitPLMN-Id                     PLMN-Identity
        }
    }
}

MBMS-ServiceSchedulingInfo-r6 ::=   SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-ServiceTransmInfoList          MBMS-ServiceTransmInfoList          OPTIONAL,
    nextSchedulingperiod                INTEGER (0..31)
}

MBMS-ServiceSchedulingInfoList-r6 ::= SEQUENCE (SIZE (1..maxMBMSservSched)) OF
                                    MBMS-ServiceSchedulingInfo-r6

MBMS-ServiceTransmInfo ::=          SEQUENCE {
    -- Actual values (start, duration) = IE values * 4
    start                               INTEGER (0..255),
    duration                            INTEGER (1..256)
}

MBMS-ServiceTransmInfoList ::=      SEQUENCE (SIZE (1..maxMBMSTransmis)) OF
                                    MBMS-ServiceTransmInfo

MBMS-SessionIdentity ::=            OCTET STRING (SIZE (1))

MBMS-ShortTransmissionID ::=        INTEGER (1..32maxMBMSservUnmodif)

MBMS-SIBType5-SCCPCH-r6 ::=         SEQUENCE {
    sccpchIdentity                      MBMS-SCCPCHIdentity,
    transpCHInformation                 MBMS-TrCHInformation-SIB5List
}

MBMS-SIBType5-SCCPCHList-r6 ::=     SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                    MBMS-SIBType5-SCCPCH-r6

MBMS-TCTF-Presence ::=              ENUMERATED { false }

MBMS-TimersAndCouneters-r6 ::=      SEQUENCE {
    t-318                               T-318                               DEFAULT ms1000
}

MBMS-TransmissionIdentity ::=       SEQUENCE {
    mbms-ServiceIdentity                MBMS-ServiceIdentity,
    mbms-SessionIdentity                MBMS-SessionIdentity                OPTIONAL
}
```

```
MBMS-TranspChInfoForCCTrCh-r6 ::=   SEQUENCE {
    commonCCTrChIdentity                MBMS-CommonCCTrChIdentity,
    -- If the IE transportFormatCombinationSet is absent, the default TFCS as specified
    -- in 14.10.1 applies
    transportFormatCombinationSet       TFCS                                OPTIONAL
}

MBMS-TranspChInfoForEachCCTrCh-r6 ::= SEQUENCE (SIZE (1..maxMBMS-CommonCCTrCh)) OF
                                    MBMS-TranspChInfoForCCTrCh-r6

MBMS-TranspChInfoForEachTrCh-r6 ::= SEQUENCE (SIZE (1..maxMBMS-CommonTrCh)) OF
                                    MBMS-TranspChInfoForTrCh-r6

MBMS-TranspChInfoForTrCh-r6 ::=     SEQUENCE {
    commonTrChIdentity                  MBMS-CommonTrChIdentity,
    transportFormatSet                  TransportFormatSet
}

MBMS-TrCHInformation-Comm ::=       SEQUENCE {
    transpCh-Info                       MBMS-CommonTrChIdentity,
    rbInformation                       MBMS-PTM-RBInformation-CList        OPTIONAL,
    mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6       OPTIONAL
}

MBMS-TrCHInformation-CommList ::=   SEQUENCE (SIZE (1..maxTrChperSCCPCH)) OF
                                    MBMS-TrCHInformation-Comm

MBMS-TrCHInformation-Neighb ::=     SEQUENCE {
    transpCh-Info                       MBMS-CommonTrChIdentity,
    transpCh-CombiningStatus            BOOLEAN,
    rbInformation                       MBMS-PTM-RBInformation-NList        OPTIONAL,
    mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6       OPTIONAL
}

MBMS-TrCHInformation-NeighbList ::= SEQUENCE (SIZE (1..maxFACHPCH)) OF
                                    MBMS-TrCHInformation-Neighb

MBMS-TrCHInformation-SIB5 ::=       SEQUENCE {
    transpCh-Identity                   INTEGER (1..maxFACHPCH),
    rbInformation                       MBMS-PTM-RBInformation-SList        OPTIONAL,
    mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6       OPTIONAL
}

MBMS-TrCHInformation-SIB5List ::=   SEQUENCE (SIZE (1..maxTrChperSCCPCH)) OF
                                    MBMS-TrCHInformation-SIB5

MBMS-TypeOfL1Combining ::=          CHOICE {
    rake                                NULL,
    soft                                MBMS-L1CombiningTransmTimeDiff
}
MBMS-UnmodifiedService-r6 ::=       SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-RequiredUEAction               MBMS-RequiredUEAction-UMod,
    mbms-PreferredFrequency             MBMS-PFLIndex                       OPTIONAL
}

MBMS-UnmodifiedServiceList-r6 ::=   SEQUENCE (SIZE (1..maxMBMSservUnmodif)) OF
                                    MBMS-UnmodifiedService-r6
```

11.4 Constant definitions

```
Constant-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

hiPDSCHidentities           INTEGER ::= 64
hiPUSCHidentities           INTEGER ::= 64
hiRM                        INTEGER ::= 256
maxAC                       INTEGER ::= 16
maxAdditionalMeas           INTEGER ::= 4
maxASC                      INTEGER ::= 8
maxASCmap                   INTEGER ::= 7
maxASCpersist               INTEGER ::= 6
maxCCTrCH                   INTEGER ::= 8
maxCellMeas                 INTEGER ::= 32
maxCellMeas-1               INTEGER ::= 31
```

```
maxCNdomains                INTEGER ::= 4
maxCPCHsets                 INTEGER ::= 16
maxDPCH-DLchan              INTEGER ::= 8
maxDPDCH-UL                 INTEGER ::= 6
maxDRACclasses              INTEGER ::= 8
maxE-DCHMACdFlow            INTEGER ::= 1   -- FFS
maxE-DCHMACdFlow-1          INTEGER ::= 0   -- FFS
maxFACHPCH                  INTEGER ::= 8
maxFreq                     INTEGER ::= 8
maxFreqBandsFDD             INTEGER ::= 8
maxFreqBandsTDD             INTEGER ::= 4
maxFreqBandsGSM             INTEGER ::= 16
maxGERAN-SI                 INTEGER ::= 8
maxGSMTargetCells           INTEGER ::= 32
maxHarqRTT                  INTEGER ::= 1   -- FFS
maxHProcesses               INTEGER ::= 8
maxHSDSCHTBIndex            INTEGER ::= 64
maxHSDSCHTBIndex-tdd384     INTEGER ::= 512
maxHSSCCHs                  INTEGER ::= 4
maxInterSysMessages         INTEGER ::= 4
maxLoCHperRLC               INTEGER ::= 2
maxMAC-d-PDUsizes           INTEGER ::= 8
maxMBMS-CommonCCTrCh        INTEGER ::= 32
maxMBMS-CommonPhyCh         INTEGER ::= 32
maxMBMS-CommonRB            INTEGER ::= 32
maxMBMS-CommonTrCh          INTEGER ::= 32
maxMBMS-Freq                INTEGER ::= 4
maxMBMS-L1CP                INTEGER ::= 4
maxMBMSservCount            INTEGER ::= 48
maxMBMSservDedic            INTEGER ::= 4
maxMBMSservModif            INTEGER ::= 432
maxMBMSservSched            INTEGER ::= 16
maxMBMSservUnmodif          INTEGER ::= 3264
maxMBMSTransmis             INTEGER ::= 4
maxMeasEvent                INTEGER ::= 8
maxMeasIntervals            INTEGER ::= 3
maxMeasParEvent             INTEGER ::= 2
maxNumCDMA2000Freqs         INTEGER ::=  8
maxNumGSMFreqRanges         INTEGER ::= 32
maxNumFDDFreqs              INTEGER ::=  8
maxNumTDDFreqs              INTEGER ::=  8
maxNoOfMeas                 INTEGER ::= 16
maxOtherRAT                 INTEGER ::= 15
maxOtherRAT-16              INTEGER ::= 16
maxPage1                    INTEGER ::= 8
maxPCPCH-APsig              INTEGER ::= 16
maxPCPCH-APsubCh            INTEGER ::= 12
maxPCPCH-CDsig              INTEGER ::= 16
maxPCPCH-CDsubCh            INTEGER ::= 12
maxPCPCH-SF                 INTEGER ::= 7
maxPCPCHs                   INTEGER ::= 64
maxPDCPAlgoType             INTEGER ::= 8
maxPDSCH                    INTEGER ::= 8
maxPDSCH-TFCIgroups         INTEGER ::= 256
maxPRACH                    INTEGER ::= 16
maxPRACH-FPACH              INTEGER ::= 8
maxPredefConfig             INTEGER ::= 16
maxPUSCH                    INTEGER ::= 8
maxQueueIDs                 INTEGER ::= 8
maxRABsetup                 INTEGER ::= 16
maxRAT                      INTEGER ::= 16
maxRB                       INTEGER ::= 32
maxRBallRABs                INTEGER ::= 27
maxRBMuxOptions             INTEGER ::= 8
maxRBperRAB                 INTEGER ::= 8
maxRBperTrCh                INTEGER ::= 16
maxReportedGSMCells         INTEGER ::= 8
maxRL                       INTEGER ::= 8
maxRL-1                     INTEGER ::= 7
maxRLCPDUsizePerLogChan     INTEGER ::= 1   -- FFS
maxRFC3095-CID              INTEGER ::= 16384
maxROHC-PacketSizes-r4      INTEGER ::= 16
maxROHC-Profile-r4          INTEGER ::= 8
maxSat                      INTEGER ::= 16
maxSCCPCH                   INTEGER ::= 16
maxSIB                      INTEGER ::= 32
maxSIB-FACH                 INTEGER ::= 8
maxSIBperMsg                INTEGER ::= 16
```

```
maxSRBsetup                 INTEGER ::= 8
maxSystemCapability         INTEGER ::= 16
maxTF                       INTEGER ::= 32
maxTF-CPCH                  INTEGER ::= 16
maxTFC                      INTEGER ::= 1024
maxTFCsub                   INTEGER ::= 1024
maxTFCI-2-Combs             INTEGER ::= 512
maxTGPS                     INTEGER ::= 6
maxTrCH                     INTEGER ::= 32
maxTrChperSCCPCH            INTEGER ::= 8
-- maxTrCHpreconf should be 16 but has been set to 32 for compatibility
maxTrCHpreconf              INTEGER ::= 32
maxTS                       INTEGER ::= 14
maxTS-1                     INTEGER ::= 13
maxTS-2                     INTEGER ::= 12
maxTS-LCR                   INTEGER ::= 6
maxTS-LCR-1                 INTEGER ::= 5
maxURA                      INTEGER ::= 8
maxURNTI-Group              INTEGER ::= 8

END
```

14.10.1 Default TFCS for MBMS

14.10.1.1 S-CCPCH configuration including a FACH carrying MSCH

In case the S-CCPCH configuration includes a FACH carrying MSCH, the default TFCS is defined according to the following:

Let TrCH 1 be the FACH carrying MSCH, TrCH 2 be the first TrCH listed in the IE "FACH carrying MTCH list", TrCH 3 be the second TrCH listed in the IE "FACH carrying MTCH list" etc. and let TrCH I be the last TrCH listed in the IE "FACH carrying MTCH list".

Each transport channel $TrCH_i$, i = 1, 2, …, I, has L_i transport formats, i.e. the transport format indicator TFI_i can take L_i values.

Each transport format combination set is defined by the transport formats of each transport channel mapped on this S-CCPCH:

$TFC = (TFI_1, TFI_2, \ldots, TFI_I)$.

The "MBMS implicit TFCS" contains then the following set of TFCs:

$TFCS = \{(0,1,\ldots,0),\ldots,(0,L_2,\ldots,0),(0,0,1,\ldots,0),\ldots,(0,0,L_3,\ldots,0),\ldots,(0,0,0,\ldots,1),\ldots,(0,0,0,\ldots,L_I),$
$(1,1,\ldots,0),\ldots,(1,L_2,\ldots,0),(1,0,1,\ldots,0),\ldots,(1,0,L_3,\ldots,0),\ldots,(1,0,0,\ldots,1),\ldots,(1,0,0,\ldots,L_I),$
$(2,0,\ldots,0),\ldots,(L_1,0,\ldots,0)\}$

14.10.1.2 S-CCPCH configuration not including a FACH carrying MSCH

In case the S-CCPCH configuration does not include a FACH carrying MSCH, the default TFCS is defined according to the following:

Let TrCH 1 be the first TrCH listed in the IE "FACH carrying MTCH list", TrCH 3 be the second TrCH listed in the IE "FACH carrying MTCH list" etc. and let TrCH I be the last TrCH listed in the IE "FACH carrying MTCH list".

Each transport channel $TrCH_i$, i = 1, 2, …, I, has L_i transport formats, i.e. the transport format indicator TFI_i can take L_i values.

Each transport format combination set is defined by the transport formats of each transport channel mapped on this S-CCPCH:

$TFC = (TFI_1, TFI_2, \ldots, TFI_I)$.

The "MBMS implicit TFCS" contains then the following set of TFCs:

$TFCS = \{(1,\ldots,0),\ldots,(L_1,\ldots,0),(0,1,\ldots,0),\ldots,(0,L_2,\ldots,0),\ldots,(0,0,\ldots,1),\ldots,(0,0,\ldots,L_I)\}$

3GPP TSG-RAN Working Group 2 #46bis
Beijing, China, 4 – 8 April 2005

Tdoc ⌘ R2-051129

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2549** ⌘ **rev** **1** ⌘ Current version: **6.5.0** ⌘

*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:	⌘	Correction to MBMS notification procedure
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	08/04/2005
Category:	⌘	**F**
Release:	⌘	REL-6

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:	⌘	MICH reception is optional. But, in the current spec whether MICH reception is optional or not is unclear.
Summary of change:	⌘	The former description in 8.7.3.3.2 is moved to 8.7.3.3.1 to combine description of notification reception via MCCH. Also, it is stated in 8.7.3.3.1 that UE that is not receiving MTCH "may" monitor MICH to acquire an MBMS notification.
Consequences if not approved:	⌘	How to implement the MBMS notification in the UE remains to be unclear.

Clauses affected:	⌘	

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
				Test specifications	
				O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.7.3 MBMS Notification

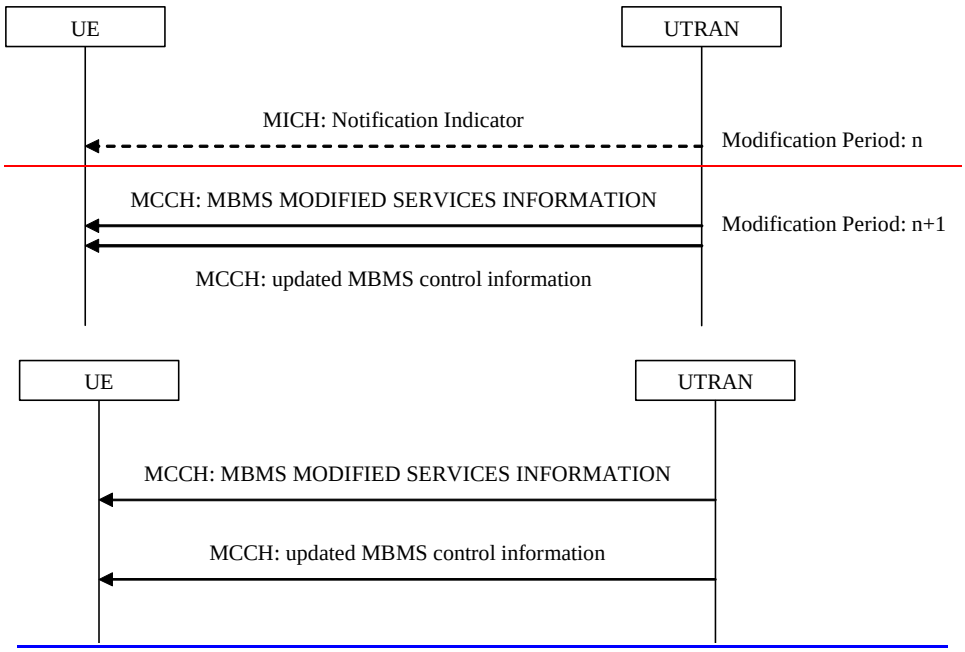

Figure 8.7.3-1: MBMS notification on MCCH ~~including notification on MICH~~

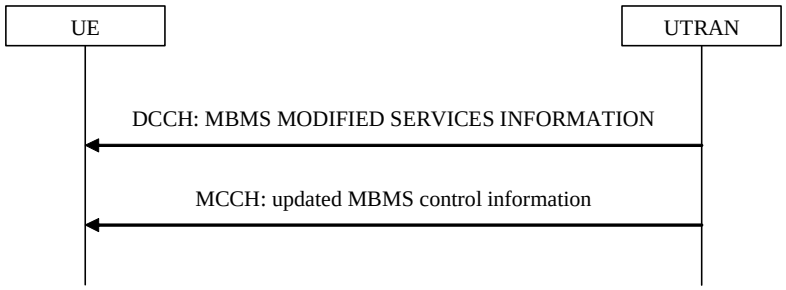

Figure 8.7.3-2: MBMS notification on DCCH~~, dedicated~~

8.7.3.1 General

The MBMS notification procedure is used by the UE to respond to a notification provided by UTRAN, indicating a change applicable for one or more MBMS services the UE has joined. The procedure applies to all UEs supporting MBMS, irrespective of their state (idle and connected mode: URA_PCH, CELL_PCH, CELL_FACH and CELL_DCH). The actual notification mechanism to be used depends on the UE state.

8.7.3.2 Initiation

UTRAN initiates the notification procedure to inform UEs about a change applicable for one or more MBMS services available in a cell. Some types of MBMS service changes eg. the establishment of a p-t-m radio bearer, involve a modification of MCCH messages other than the MBMS MODIFIED SERVICES INFORMATION message.

NOTE 1: On MCCH, the MBMS MODIFIED SERVICES INFORMATION as well as the MBMS UNMODIFIED SERVICES INFORMATION messages are signalled even if no services are contained in the message.

NOTE 2: A service remains in the MBMS MODIFIED SERVICES INFORMATION message until it enters a ‘steady state’, upon which it moves to the MBMS UNMODIFIED SERVICES INFORMATION message. In case counting is used, the service remains in the MBMS MODIFIED SERVICES INFORMATION message through the moment UTRAN has decided the transfer mode.

8.7.3.3 Receiving the MBMS Notification information

~~This case applies when UTRAN provides a notification indication on the MICH for the corresponding MBMS service.~~

8.7.3.3.1 Reception via MCCH~~the MICH~~

The UE may:

1> if ~~A UE~~ in idle mode, URA_PCH, CELL_PCH ~~and~~ or CELL_FACH state; and ~~that~~

1> if ~~is~~ not receiving an MBMS service provided via a p-t-m radio bearer ~~shall~~ :

2> monitor the MBMS notification Indicator Channel (MICH) ~~as specified in [4]~~.

2> ~~If~~ if ~~the UE detects~~ a notification on the MICH for one or more of the MBMS services included in variable MBMS_ACTIVATED_SERVICES is detected~~, the UE shall~~:

~~1~~3> ~~A~~acquire the MBMS MODIFIED SERVICES INFORMATION message with delaying the reading of MCCH until the next modification period and with stopping at the end of the modification period, in accordance with 8.7.1.3;~~.~~

~~1~~3> ~~H~~handle the MBMS MODIFIED SERVICES INFORMATION message as specified in 8.7.3.4.

The UE shall:

1> if in idle mode, URA_PCH, CELL_PCH or CELL_FACH state:

2> if receiving an MBMS service that is provided via a p-t-m radio bearer; or

2> if not receiving an MBMS service that is provided via a p-t-m radio bearer and not monitoring MICH:

3> acquire the MBMS MODIFIED SERVICES INFORMATION message from MCCH at the start of every modification period, in accordance with 8.7.1.3;

3> handle the MBMS MODIFIED SERVICES INFORMATION message as specified in 8.7.3.4.

8.7.3.3.2 Void~~Reception when receiving an MBMS service provided p-t-m~~

~~A UE in idle mode, URA_PCH, CELL_PCH and CELL_FACH state that is receiving an MBMS service that is provided via a p-t-m radio bearer shall:~~

~~1> Acquire the MBMS MODIFIED SERVICES INFORMATION message from MCCH at the start of every modification period, in accordance with 8.7.1.3.~~

~~1> Handle the MBMS MODIFIED SERVICES INFORMATION message as specified in 8.7.3.4.~~

8.7.3.3.3 Reception via DCCH

Notification via DCCH is used to notify the UE about the start of a session for which a PL applies, to notify the UE about the establishment of a p-t-m radio bearer for a service for which a PL does not apply and to request a UE in PMM_idle state to establish a PMM connection to enable reception of a service provided via a p-t-p radio bearer.

Upon receiving the MBMS MODIFIED SERVICES INFORMATION message via DCCH, a UE in CELL_DCH shall:

1> Handle the MBMS MODIFIED SERVICES INFORMATION message as specified in 8.7.3.4.

8.7.3.4 UE action upon receiving MBMS MODIFIED SERVICES INFORMATION message

Upon receiving the MBMS MODIFIED SERVICES INFORMATION message, the UE shall act as follows for each of the services included in this messages provided that the service is included in variable MBMS_ACTIVATED_SERVICES and upper layers indicate that the session has not yet been received correctly (referred to as ‘applicable services’):

1> Act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following

1> If one or more preferred frequency applies for the applicable services:

2> delay acting upon the "MBMS Preferred frequency information" until after completing the MCCH acquisition

2> Act upon the "MBMS Preferred frequency information" as specified in 8.6.9.2 for the service(s) that upper layers indicate to have highest priority

1> Perform the service prioritisation procedure as specified in 8.5.26;

1> If applicable, use a single MBMS MODIFICATION REQUEST to request release of radio bearers corresponding with lower priority MBMS services provided p-t-p and/ or to request a move to the preferred frequency as specified in 8.5.26 and 8.6.9.2 respectively;

1> The procedure ends.

8.7.3.5 UE fails to receive MBMS Notification information

If the UE fails to receive the MBMS MODIFIED SERVICES INFORMATION message within the current modification period, the UE shall:

1> Acquire the MBMS MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION messages without delaying reading of MCCH until the next modification period and with stopping at the end of that modification period, in accordance with 8.7.1.3

1> act upon the received MBMS MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION messages as specified in subclause 8.7.2.4

3GPP TSG-RAN WG2 Meeting #46bis
Beijing, China, April 4-8, 2005

***Tdoc* ⌘R2-051130**

CR-Form-v7.1

CHANGE REQUEST

⌘ **25.331** **CR** **2550** ⌘**rev** **1** ⌘ Current version: **6.5.0** ⌘

*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:	⌘	FACH Measurement Occasion when UE receives MBMS
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	04/04/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

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:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	FACH Measurement Occasion Operation for MBMS is ambiguous, since it is not clear if a UE 'monitors' S-CCPCH carrying an MBMS logical channel. Secondly, a new demodulation requirement is being developed by RAN4 which restricts the amount of time available to UEs to perform measurements
Summary of change:	⌘	1. It is clarified that FACH measurement occasions are calculated the same way as earlier releases: using S-CCPCH that carry dedicated channels on FACH. 2. A typo in the existing text is corrected: the reference to section 8.4.1.8 (which is on Cell_DCH measurements) should be 8.4.1.9 (which is on Cell_FACH measurements). 3. A note highlighting that the UE may have less than the full measurement occasion to perform measurements in order to meet the demodulation test in 25.101
Consequences if not approved:	⌘	1. FACH measurement occasions will be longer, degrading MBMS operation 2. FACH measurement occasion calculation will not be backward compatible with previous releases. 3. Specification may lack clarity.

Clauses affected:	⌘	8.5.11

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	

	X	O&M Specifications

Other comments: ⌘

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.5.11 FACH measurement occasion calculation

When in CELL_FACH state and when the variable C_RNTI is non-empty the UE in FDD mode shall perform measurements as specified in subclauses 8.4.1.6 and 8.4.1.~~8~~9 during the frame(s) with the SFN value fulfilling the following equation:

$$SFN \text{ div } N = C\_RNTI \bmod M\_REP + n * M\_REP$$

where

- N is the TTI (in number of 10ms frames) of the FACH having the largest TTI on the SCCPCH ~~monitored by UE~~ selected by the UE according to the procedure in subclause 8.5.19. FACHs that only carry MBMS logical channels (MTCH, MSCH, or MCCH) are excluded from measurement occasion calculations.
- C_RNTI is the C-RNTI value of the UE stored in the variable C_RNTI
- M_REP is the Measurement Occasion cycle length. According to the equation above, a FACH Measurement Occasion of N frames will be repeated every N * M_REP frame, and $M\_REP = 2^k$.

  where,

  - k is the FACH Measurement occasion cycle length coefficient.
    The value of the FACH Measurement occasion cycle length coefficient is read in system information in "System Information Block type 11" or "System Information Block type 12" in the IE "FACH measurement occasion info".
- n = 0,1,2… as long as SFN is below its maximum value

The UE is allowed to measure on other occasions in case the UE moves "out of service" area or in case it can simultaneously perform the ordered measurements.

A UE in TDD mode shall use the frame(s) with the SFN value fulfilling the above equation for neighbour cells measurements.

NOTE: For FDD, in order to meet the MBMS demodulation performance requirements [21], a UE receiving MBMS PTM may not be able use the entire measurement occasion.

3GPP TSG-RAN-WG2 Meeting #46bis
Beijing, China, 4-8, April 2005

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CHANGE REQUEST

⌘ **25.331** **CR** **2551** ⌘ **rev** **-** ⌘ Current version: **6.5.0** ⌘

*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:	⌘	Frequency layer dispersion
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	April/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

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:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	Overload could be occurred on the preferred MBMS frequency layer when an MBMS session stops.
Summary of change:	⌘	Insertion of the Frequency dispersion feature in 25.331.
Consequences if not approved:	⌘	There is a risk of overload on the preferred frequency layer upon session stop.

Clauses affected:	⌘	8.5.27, 8.6.9.6, 10.2.16j, 13.4.11d, 11.3			
		Y	**N**		
Other specs Affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.5.27 Preferred frequency layer selection

The UE shall perform the Preferred frequency layer selection procedure upon receiving the IE "MBMS Preferred frequency information".

The UE shall:

1> consider MBMS services, for which a preferred frequency layer is specified, to be available only on the concerned frequecy;

1> consider MBMS services, for which no preferred frequency layer is specified, to be available on all frequencies;

1> consider that UTRAN will provide any non- MBMS services on all frequecies unless specified otherwise;

1> if based on the above, the UE detects that it is incapable of receiving all services:

2> perform the Service prioritisation procedure as specified in 8.5.26.

1> if more than one preferred frequency layer applies for the services included in variable MBMS_ACTIVATED_SERVICES:

2> select the preferred frequency of the service that upper layers indicate to have highest priority of the services for which a preferred frequency layer applies.

1> if only one preferred frequency layer applies for the services included in variable MBMS_ACTIVATED_SERVICES:

2> select that preferred frequency.

1> otherwise:

2> select the currently used frequency.

1> if the selected preferred frequency is different from the currently used frequency:

2> if the UE is in CELL_DCH:

3> request UTRAN to be moved to the preferred frequency by means of the MBMS MODIFICATION REQUEST message as specified in 8.7.6;

3> upon receiving a request to move to the requested preferred frequency, store the frequency information of the frequency on which the UE was operating prior to cell-reselection to the preferred frequency in the variable MBMS_PREV_FREQUENCY_INFORMATION;

2> otherwise:

3> apply the cell-reselection procedure as described in [25.304], using the received "MBMS Preferred frequency information",

3> if the UE re-selects to a cell on the indicated preferred frequency:

4> apply the MCCH acquisition procedure, as specified in 8.7.2

4> if the UE is in CELL_FACH, CELL_PCH or URA_PCH:

5> act according to subclause 8.3.1.2.

4> store the frequency information of the frequency on which the UE was operating prior to cell-reselection to the preferred frequency in the variable MBMS_PREV_FREQUENCY_INFORMATION..

8.6.9.6 MBMS Required UE action

If the IE "MBMS required UE action" is included the UE shall:

1> if the "MBMS required UE action" is set to 'None':

2> take no action with respect to this IE.

1> if the IE "MBMS required UE action" is set to 'Acquire counting info':

2> perform the MBMS counting procedure as specified in subclause 8.7.4;

NOTE: If upper layers indicate that an MBMS transmission has already been received correctly, the UE will continue as if the information about the concerned MBMS transmission was not included in the message. This implies that the UE does not respond to counting for a transmission already received correctly.

1> if the IE "MBMS required UE action" is set to 'Acquire PTM RB info':

2> continue acquiring the MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION messages without delaying reading of MCCH until the next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3

2> act upon the MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION message, if received, in accordance with subclause 8.7.5;

1> if the IE "MBMS required UE action" is set to ‘Establish PMM connection’:

2> if the UE is in idle mode:

3> indicate to upper layers that action is required to receive the concerned MBMS service.

2> if the UE is in URA_PCH:

3> perform a cell update procedure with cause "MBMS reception" as specified in subclause 8.3.1.2.

1> if the IE "MBMS required UE action" is set to ‘Release PTM RB:

2> stop receiving the concerned MBMS service. ~~and clear all service specific information applicable for the concerned service~~

2> if the UE is in a state other than CELL_DCH (for FDD) or if the UE is in Idle mode, URA_PCH or CELL_PCH state (for TDD) and;

2> if the UE does not decide to receive an MBMS service for which a preferred frequency applies and;

2> if the IE ‘MBMS dispersion indicator’ is set to TRUE and;

2> if the variable MBMS_PREV_FREQUENCY_INFO is not empty:

3> if any frequency in SIB11 or SIB12 has the same frequency stored in the variable MBMS_PREV_FREQUENCY_INFO:

4> select a suitable UTRA cell in that frequency.

4> if no suitable UTRA cell in that frequency is found:

5> select a suitable UTRA cell in another frequencies.

3> if no frequency in SIB11 or SIB12 has the same frequency stored in the variable MBMS_PREV_FREQUENCY_INFO.

4> select a frequency randomly among the inter-frequencies indicated in SIB11 or SIB12.

5> select a suitable UTRA cell in the selected frequency

5> if no suitable UTRA cell in the selected frequency is found;

6>- select a suitable UTRA cell in another frequencies.

3>- clear the variable MBMS_PREV_FREQUENCY_INFO

2>- clear all service specific information applicable for the concerned service.

NOTE: The UE is only required to acquire the relevant SIB11 or SIB12, according to what is specified in subclauses 8.1.1.6.11 and 8.1.1.6.12.

10.2.16j MBMS MODIFIED SERVICES INFORMATION

This information is transmitted periodically by UTRAN to inform UEs about a change applicable for one or more MBMS services available in the current cell and possibly in neighbouring cells.

Logical channel: MCCH, DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Modified service list	OP	1.. <maxMBMSservModif>			REL-6
>MBMS Transmission identity	MP		MBMS Transmission identity 10.3.9a.12		REL-6
>MBMS required UE action	MP		Enumerated (None, Acquire counting info, Acquire PTM RB info, Establish PMM connection, Release PTM RB, Aquire MCCH)	Indicates required UE action upon receiving the message. When sent on the DCCH, only the following values apply: None (FLC), Acquire PTM RB info, Establish PMM connection).	REL-6
>MBMS preferred frequency	OP			Indicates the frequency that UEs shall consider as the preferred frequency layer for cell re-selection during a session for an MBMS service the UE has joined, as specified in [25.304] .	REL-6
>>PFL index	CV-*MCCH*		Integer (1.. <maxMBMS-Freq>)	Index pointing to an entry in the list included in MBMS GENERAL INFORMATION.	REL-6
>>PFL info	CV-*DCCH*		Frequency info 10.3.6.36		REL-6
> MBMS dispersion indicator	CV-*PTM release*		BOOLEAN	Indicates whether or not the UE should attempt a cell selection on another frequency other than the current one.	REL-6
>Continue MCCH reading	MP		BOOLEAN	MCCH in- band notification. Indicates whether or not the UE should continue reading MCCH in the next modification period. Not applicable when sent on the DCCH	REL-6
End of modified MCCH information	OP		Integer ()	Final TTI including MCCH messages with different content than in the previous modification period	REL-6

Condition	Explanation
MCCH	This IE is mandatory present if the message is sent via MCCH and not needed otherwise.
DCCH	This IE is mandatory present if the message is sent via DCCH and not needed otherwise.
PTM release	This IE is mandatory present if the IE MBMS required UE action is set to 'Release PTM RB' and not needed otherwise

13.4.11d MBMS_PREV_FREQUENCY_INFO

This variable stores the frequency information of the cell the UE is camped on, upon moving to the MBMS preferred layer indicated MBMS FLC preferred frequency information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
PREV Frequency Information					
CHOICE *mode*					
>FDD cell					
>>UARFCN downlink (Nd)	MP		Integer(0 .. 16383)	[21]	
>3.84 Mcps TDD cell					
>>UARFCN (Nt)	MP		Integer(0 .. 16383)	[22]	
>1.28 Mcps TDD cell list					
>>UARFCN (Nt)	MP		Integer(0 .. 16383)	[22]	

```
MBMS-ModifedService-r6 ::=          SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-RequiredUEAction               MBMS-RequiredUEAction,
    mbms-PreferredFrequency             CHOICE {
        mcch                                MBMS-PFLIndex,
        dcch                                MBMS-PFLInfo
    }       OPTIONAL,
    mbms-DispersionIndicator            BOOLEAN,
    continueMCCHReading                 BOOLEAN
}
```

3GPP TSG-RAN WG2 WG RAN2#46bis
Bejing, China, 4th – 8th April 2005

R2-051214

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2560** ⌘**rev** **1** ⌘ Current version: **6.5.0** ⌘

*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 ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	Addition of the number of MBMS Neighbour Cell PTM Information messages to the MBMS Modified Services Information message.
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	27/04/05
Category:	⌘	**F**
Release:	⌘	Rel-6

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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	To enable a UE to detect whether it has received all of the MBMS neighbour cell information that is transmitted on MCCH and hence avoid receiving additional MCCH transmissions unecessarily.
Summary of change:	⌘	A new IE 'MBMS number of neighbour cells' is added to the MBMS Modified Services Information message 10.2.16j. The IE is MP with range 0..32. A description of UE behaviour for the parameter is made in 8.6.9.3a. The IE indicates the number of MBMS Neighbouring Cell P-T-M RB Information messages that are present in the MCCH transmission.
Consequences if not approved:	⌘	UEs will not be able to detect whether they have all of the radio bearer information that they require.

Clauses affected:	⌘	8.6.9.3a (new),10.2.16j, 11.2, 11.3

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.6.9 MBMS specific information elements

The UE shall perform the generic actions defined in this subclause only for the information elements corresponding with services that are included in variable MBMS_ACTIVATED_SERVICES.

8.6.9.1 Continue MCCH Reading

If the "Continue MCCH Reading " is included the UE shall:

1> if the IE "Continue MCCH reading " is set to 'TRUE':

2> continue receiving the MBMS MODIFIED SERVICES INFORMATION from MCCH in the next modification period and act upon it as specified in subclause 8.7.3.4.

8.6.9.2 MBMS FLC applicability information

The UE shall:

1> if the IE "MBMS FLC applicability information" is not included; and

1> if the IE "RRC state indicator" is set to a value other than 'CELL_DCH':

2> apply the MBMS frequency layer convergence information provided within IE "MBMS preferred frequency information" in the indicated RRC state.

1> otherwise:

2> not apply the MBMS frequency layer convergence information provided within the IE "MBMS preferred frequency information" in the indicated RRC state;

2> consider that UTRAN will not provide any non- MBMS services on the MBMS preferred frequencies;

2> if as a result of this, the UE detects that it is incapable of receiving all services:

3> perform the service prioritization procedure as specified in subclause 8.5.26.

8.6.9.3 MBMS L1 combining schedule

If the IE "MBMS L1 combining schedule" is included the UE may:

1> apply L1 combining between the concerned neighbouring cell’s S-CCPCH and the corresponding current cell’s S-CCPCH for the periods indicated by this IE.

8.6.9.3a MBMS Number of neighbour cells

The UE may:

1> apply the number of neighbour cells to identify if all MBMS NEIGHBOURING CELL P-T-M RB INFORMATION messages have been received from MCCH.

8.6.9.4 MBMS Preferred frequency information

If the IE "MBMS Preferred frequency information" is included the UE shall:

1> perform the Preferred frequency layer selection procedure as specified in subclause 8.5.27.

8.6.9.5 MBMS RB list released to change transfer mode

If the IE "MBMS RB list released to change transfer mode" is included the UE shall:

1> perform the service prioritisation procedure as specified in subclause 8.5.26, taking into account that the MBMS service(s) for which the radio bearers are released will be provided via p-t-m radio bearer(s).

8.6.9.6 MBMS Required UE action

If the IE "MBMS required UE action" is included the UE shall:

1> if the "MBMS required UE action" is set to 'None':

2> take no action with respect to this IE.

1> if the IE "MBMS required UE action" is set to 'Acquire counting info':

2> perform the MBMS counting procedure as specified in subclause 8.7.4;

NOTE: If upper layers indicate that an MBMS transmission has already been received correctly, the UE will continue as if the information about the concerned MBMS transmission was not included in the message. This implies that the UE does not respond to counting for a transmission already received correctly.

1> if the IE "MBMS required UE action" is set to 'Acquire PTM RB info':

2> continue acquiring the MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION messages without delaying reading of MCCH until the next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3

2> act upon the MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION message, if received, in accordance with subclause 8.7.5;

1> if the IE "MBMS required UE action" is set to ‘Establish PMM connection’:

2> if the UE is in idle mode:

3> indicate to upper layers that action is required to receive the concerned MBMS service.

2> if the UE is in URA_PCH:

3> perform a cell update procedure with cause "MBMS reception" as specified in subclause 8.3.1.2.

1> if the IE "MBMS required UE action" is set to ‘Release PTM RB:

2> stop receiving the concerned MBMS service and clear all service specific information applicable for the concerned service

1> if the "MBMS required UE action" is set to ‘Acquire MCCH’:

2> perform the MCCH acquisition procedure as specified in subclause 8.7.2.

8.6.9.7 MBMS Service transmissions list

If the UE receives the IE "MBMS Service transmissions list", the UE may:

1> discontinue reception of the S-CCPCH on which the IE was received, except for the periods indicated by this IE.

8.6.9.8 MBMS Short transmission ID

If the IE "MBMS short transmission ID" is included the UE shall:

1> compile a list of available MBMS services, as included in the MBMS MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION messages acquired in the same modification period as the one in which the "MBMS short transmission ID" is received:

2> concatenate the services contained in IE "Modified services list" included in the MBMS MODIFIED SERVICES INFORMATION and the services contained in IE "Unmodified services list" included in the MBMS UNMODIFIED SERVICES INFORMATION:

1> consider the 'MBMS short transmission ID' to be the index of the entry in the list of available services and apply the MBMS service identity specified for this entry.

8.6.9.9 MBMS Transmission identity

If the IE "MBMS transmission identity" is included the UE shall:

1> if upper layers indicate that the MBMS transmission has already been received correctly:

2> ignore the information about this MBMS transmission i.e. continue as if the information about the concerned MBMS transmission was not included in the message.

10.2.16j MBMS MODIFIED SERVICES INFORMATION

This information is transmitted periodically by UTRAN to inform UEs about a change applicable for one or more MBMS services available in the current cell and possibly in neighbouring cells.

Logical channel: MCCH, DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Modified service list	OP	1.. <maxMBMSservModif>			REL-6
>MBMS Transmission identity	MP		MBMS Transmission identity 10.3.9a.12		REL-6
>MBMS required UE action	MP		Enumerated (None, Acquire counting info, Acquire PTM RB info, Establish PMM connection, Release PTM RB)	Indicates required UE action upon receiving the message. When sent on the DCCH, only the following values apply: None (FLC), Acquire PTM RB info, Establish PMM connection).	REL-6
>MBMS preferred frequency	OP			Indicates the frequency that UEs shall consider as the preferred frequency layer for cell re-selection during a session for an MBMS service the UE has joined, as specified in [25.304] .	REL-6
>>PFL index	CV-*MCCH*		Integer (1.. <maxMBMS-Freq>)	Index pointing to an entry in the list included in MBMS GENERAL INFORMATION.	REL-6
>>PFL info	CV-*DCCH*		Frequency info 10.3.6.36		REL-6
>Continue MCCH reading	MP		BOOLEAN	MCCH in- band notification. Indicates whether or not the UE should continue reading MCCH in the next modification period. Not applicable when sent on the DCCH	REL-6
MBMS re- aquire MCCH	MP		BOOLEAN		REL-6
End of modified MCCH information	OP		Integer (1..15)	Final TTI including MCCH messages with different content than in the previous modification period	REL-6
MBMS number of neighbour cells	MP		Integer (0..32)	Indicates the number of MBMS NEIGHBOURING CELL P-T-M RB INFORMATION messages that are contained within the MCCH transmission.	REL-6

Condition	Explanation
MCCH	This IE is mandatory present if the message is sent via MCCH and not needed otherwise.
DCCH	This IE is mandatory present if the message is sent via DCCH and not needed otherwise.

11.2 PDU definitions

```
--**************************************************************
--
-- TABULAR: The message type and integrity check info are not
-- visible in this module as they are defined in the class module.
-- Also, all FDD/TDD specific choices have the FDD option first
-- and TDD second, just for consistency.
--
--**************************************************************

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

--**************************************************************
--
-- IE parameter types from other modules
--
--**************************************************************

IMPORTS

-- Core Network IEs :
    CN-DomainIdentity,
    CN-InformationInfo,
    CN-InformationInfoFull,
    NAS-Message,
    PagingRecordTypeID,
    PLMN-Identity,
-- UTRAN Mobility IEs :
    CellIdentity,
    CellIdentity-PerRL-List,
    URA-Identity,
-- User Equipment IEs :
    AccessStratumReleaseIndicator,
    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CapabilityUpdateRequirement-r4,
    CapabilityUpdateRequirement-r4-ext,
    CapabilityUpdateRequirement-r5,
    CellUpdateCause,
    CellUpdateCause-ext,
    CipheringAlgorithm,
    CipheringModeInfo,
    DSCH-RNTI,
    EstablishmentCause,
    FailureCauseWithProtErr,
    FailureCauseWithProtErrTrId,
    GroupReleaseInformation,
    H-RNTI,
    UESpecificBehaviourInformation1idle,
    UESpecificBehaviourInformation1interRAT,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    N-308,
    PagingCause,
    PagingRecordList,
    PagingRecord2List-r5,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithMoreInfo,
    RadioFrequencyBandTDDList,
    Rb-timer-indicator,
    RedirectionInfo,
    RedirectionInfo-r6,
```

```
    RejectionCause,
    ReleaseCause,
    RF-CapabilityComp,
    RRC-StateIndicator,
    RRC-TransactionIdentifier,
    SecurityCapability,
    START-Value,
    STARTList,
    SystemSpecificCapUpdateReq-v590ext,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    UE-RadioAccessCapability-v370ext,
    UE-RadioAccessCapability-v380ext,
    UE-RadioAccessCapability-v3a0ext,
    UE-RadioAccessCapability-v3g0ext,
    UE-RadioAccessCapability-v4b0ext,
    UE-RadioAccessCapability-v590ext,
    UE-RadioAccessCapabilityComp,
    DL-PhysChCapabilityFDD-v380ext,
    UE-ConnTimersAndConstants,
    UE-ConnTimersAndConstants-v3a0ext,
    UE-ConnTimersAndConstants-r5,
    UE-SecurityInformation,
    URA-UpdateCause,
    UTRAN-DRX-CycleLengthCoefficient,
    WaitTime,
-- Radio Bearer IEs :
    DefaultConfigIdentity,
    DefaultConfigIdentity-r4,
    DefaultConfigIdentity-r5,
    DefaultConfigMode,
    DL-CounterSynchronisationInfo,
    DL-CounterSynchronisationInfo-r5,
    PredefinedConfigIdentity,
    PredefinedConfigStatusList,
    PredefinedConfigStatusListComp,
    PredefinedConfigSetWithDifferentValueTag,
    RAB-Info,
    RAB-Info-Post,
    RAB-InformationList,
    RAB-InformationReconfigList,
    RAB-InformationSetupList,
    RAB-InformationSetupList-r4,
    RAB-InformationSetupList-r5,
    RAB-InformationSetupList-r6-ext,
    RB-ActivationTimeInfoList,
    RB-COUNT-C-InformationList,
    RB-COUNT-C-MSB-InformationList,
    RB-IdentityList,
    RB-InformationAffectedList,
    RB-InformationAffectedList-r5,
    RB-InformationReconfigList,
    RB-InformationReconfigList-r4,
    RB-InformationReconfigList-r5,
    RB-InformationReleaseList,
    RB-PDCPContextRelocationList,
    SRB-InformationSetupList,
    SRB-InformationSetupList-r5,
    SRB-InformationSetupList2,
    UL-CounterSynchronisationInfo,
-- Transport Channel IEs:
    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
    DL-AddReconfTransChInfoList,
    DL-AddReconfTransChInfoList-r4,
    DL-AddReconfTransChInfoList-r5,
    DL-CommonTransChInfo,
    DL-CommonTransChInfo-r4,
    DL-DeletedTransChInfoList,
    DL-DeletedTransChInfoList-r5,
    DRAC-StaticInformationList,
    TFC-Subset,
    TFCS-Identity,
    UL-AddReconfTransChInfoList,
    UL-CommonTransChInfo,
    UL-CommonTransChInfo-r4,
```

```
    UL-DeletedTransChInfoList,
-- Physical Channel IEs :
    Alpha,
    CCTrCH-PowerControlInfo,
    CCTrCH-PowerControlInfo-r4,
    CCTrCH-PowerControlInfo-r5,
    ConstantValue,
    ConstantValueTdd,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-CommonInformation-r4,
    DL-CommonInformation-r5,
    DL-CommonInformationPost,
    DL-HSPDSCH-Information,
    DL-InformationPerRL-List,
    DL-InformationPerRL-List-r4,
    DL-InformationPerRL-List-r5,
    DL-InformationPerRL-List-r5bis,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-InformationPerRL-PostTDD-LCR-r4,
    DL-PDSCH-Information,
    DL-TPC-PowerOffsetPerRL-List,
    DPC-Mode,
    DPCH-CompressedModeStatusInfo,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    HARQ-Preamble-Mode,
    HS-SICH-Power-Control-Info-TDD384,
    MaxAllowedUL-TX-Power,
    OpenLoopPowerControl-IPDL-TDD-r4,
    PDSCH-CapacityAllocationInfo,
    PDSCH-CapacityAllocationInfo-r4,
    PDSCH-Identity,
    PrimaryCPICH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-CapacityAllocationInfo-r4,
    PUSCH-Identity,
    PUSCH-SysInfoList-HCR-r5,
    PDSCH-SysInfoList-HCR-r5,
    RL-AdditionInformationList,
    RL-RemovalInformationList,
    SpecialBurstScheduling,
    SSDT-Information,
    TFC-ControlDuration,
    SSDT-UL,
    TimeslotList,
    TimeslotList-r4,
    TX-DiversityMode,
    UL-ChannelRequirement,
    UL-ChannelRequirement-r4,
    UL-ChannelRequirement-r5,
    UL-ChannelRequirementWithCPCH-SetID,
    UL-ChannelRequirementWithCPCH-SetID-r4,
    UL-ChannelRequirementWithCPCH-SetID-r5,
    UL-DPCH-Info,
    UL-DPCH-Info-r4,
    UL-DPCH-Info-r5,
    UL-DPCH-InfoPostFDD,
    UL-DPCH-InfoPostTDD,
    UL-DPCH-InfoPostTDD-LCR-r4,
    UL-SynchronisationParameters-r4,
    UL-TimingAdvance,
    UL-TimingAdvanceControl,
    UL-TimingAdvanceControl-r4,
-- Measurement IEs :
    AdditionalMeasurementID-List,
    DeltaRSCP,
    Frequency-Band,
    EventResults,
    Inter-FreqEventCriteriaList-v590ext,
    Intra-FreqEventCriteriaList-v590ext,
    IntraFreqReportingCriteria-1b-r5,
    IntraFreqEvent-1d-r5,
    InterFreqEventResults-LCR-r4-ext,
```

```
    InterRATCellInfoIndicator,
    InterRAT-TargetCellDescription,
    MeasuredResults,
    MeasuredResults-v390ext,
    MeasuredResults-v590ext,
    MeasuredResultsList,
    MeasuredResultsList-LCR-r4-ext,
    MeasuredResultsOnRACH,
    MeasurementCommand,
    MeasurementCommand-r4,
    MeasurementIdentity,
    MeasurementReportingMode,
    PrimaryCCPCH-RSCP,
    SFN-Offset-Validity,
    TimeslotListWithISCP,
    TrafficVolumeMeasuredResultsList,
    UE-Positioning-GPS-AssistanceData,
    UE-Positioning-Measurement-v390ext,
    UE-Positioning-OTDOA-AssistanceData,
    UE-Positioning-OTDOA-AssistanceData-r4ext,
    UE-Positioning-OTDOA-AssistanceData-UEB,
-- Other IEs :
    BCCH-ModificationInfo,
    CDMA2000-MessageList,
    GSM-TargetCellInfoList,
    GERANIu-MessageList,
    GERAN-SystemInformation,
    GSM-MessageList,
    InterRAT-ChangeFailureCause,
    InterRAT-HO-FailureCause,
    InterRAT-UE-RadioAccessCapabilityList,
    InterRAT-UE-RadioAccessCapability-v590ext,
    InterRAT-UE-SecurityCapList,
    IntraDomainNasNodeSelector,
    ProtocolErrorMoreInformation,
    Rplmn-Information,
    Rplmn-Information-r4,
    SegCount,
    SegmentIndex,
    SFN-Prime,
    SIB-Data-fixed,
    SIB-Data-variable,
    SIB-Type,
-- MBMS IEs:
    MBMS-CellGroupIdentity-r6,
    MBMS-CommonRBInformationList-r6,
    MBMS-CurrentCell-SCCPCHList-r6,
    MBMS-DefaultL1CombiningConfigInfo-r6,
    MBMS-FLCApplicabilityInfo-r6,
    MBMS-JoinedInformation-r6,
    MBMS-MICHConfigurationInfo-r6,
    MBMS-ModifedServiceList-r6,
    MBMS-MSCHConfigurationInfo-r6,
    MBMS-NeighbouringCellSCCPCHList-r6,
    MBMS-NumberOfNeighbourCells-r6,
    MBMS-PhyChInformationList-r6,
    MBMS-PreferredFreqRequest-r6,
    MBMS-PreferredFrequencyList-r6,
    MBMS-ServiceAccessInfoList-r6,
    MBMS-ServiceSchedulingInfoList-r6,
    MBMS-SIBType5-SCCPCHList-r6,
    MBMS-TimersAndCouneters-r6,
    MBMS-TranspChInfoForEachCCTrCh-r6,
    MBMS-TranspChInfoForEachTrCh-r6,
    MBMS-UnmodifiedServiceList-r6
FROM InformationElements

    maxSIBperMsg,
    maxURNTI-Group
FROM Constant-definitions;

------------xxxx cut xxxx---------------

-- ************************************************
--
-- MBMS MODIFIED SERVICES INFORMATION
--
```

```
-- **************************************************

MBMSModifiedServicesInformation ::= SEQUENCE {
    -- MBMS Modified Services Information IEs
        modifedServiceList              MBMS-ModifedServiceList-r6          OPTIONAL,
        endOfModifiedMCCHInformation    INTEGER (0)                         OPTIONAL,   -- FFS,
        mbmsNumberOfNeighbourCells      MBMS-NumberOfNeighbourCells-r6,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}
```

11.3 Information element definitions

```
InformationElements DEFINITIONS AUTOMATIC TAGS ::=

--------------------xxxxcutxxxx--------------------------


-- **************************************************
--
--     MBMS INFORMATION ELEMENTS (10.3.9a)
--
-- **************************************************

MBMS-AccessProbabilityFactor ::=    ENUMERATED {
                                        apf0, apf32, apf64, apf96, apf128, apf160, apf192,
                                        apf224, apf256, apf288, apf320, apf352, apf384, apf416,
                                        apf448, apf480, apf512, apf544, apf576, apf608, apf640,
                                        apf672, apf704, apf736, apf768, apf800, apf832, apf864,
                                        apf896, apf928, apf960, apf1000 }

MBMS-CellGroupIdentity-r6 ::=       BIT STRING (SIZE (12))

MBMS-CommonCCTrChIdentity ::=       INTEGER (1..32)

MBMS-CommonPhyChIdentity ::=        INTEGER (1..32)

MBMS-CommonRBIdentity ::=           INTEGER (1..32)

MBMS-CommonRBInformation-r6 ::=     SEQUENCE {
    commonRBIdentity                    MBMS-CommonRBIdentity,
    pdcp-Info                           PDCP-Info-r4,
    rlc-Info                            RLC-Info-r6
}

MBMS-CommonRBInformationList-r6 ::= SEQUENCE (SIZE (1..maxMBMS-CommonRB)) OF
                                        MBMS-CommonRBInformation-r6

MBMS-CommonTrChIdentity ::=         INTEGER (1..32)

MBMS-CurrentCell-SCCPCH-r6 ::=      SEQUENCE {
    sccpchIdentity                      MBMS-SCCPCHIdentity                 OPTIONAL,
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    transpCh-InfoCommonForAllTrCh       MBMS-CommonCCTrChIdentity,
    transpCHInformation                 MBMS-TrCHInformation-CommList
}

MBMS-CurrentCell-SCCPCHList-r6 ::=  SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        MBMS-CurrentCell-SCCPCH-r6

MBMS-FACHCarryingMTCH-List ::=      SEQUENCE (SIZE (1..maxFACHPCH)) OF
                                            TransportFormatSet

MBMS-JoinedInformation-r6 ::=       SEQUENCE {
    p-TMSI                              P-TMSI-GSM-MAP                      OPTIONAL
}

MBMS-L1CombiningSchedule-32 ::=     SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..7)                      OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..7),
        periodDuration                      INTEGER (1..8)
    }
```

```
}

MBMS-L1CombiningSchedule-64 ::=     SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..15)                     OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..15),
        periodDuration                      INTEGER (1..16)
    }
}

MBMS-L1CombiningSchedule-128 ::=    SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..31)                     OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..31),
        periodDuration                      INTEGER (1..32)
    }
}

MBMS-L1CombiningSchedule-256 ::=    SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..63)                     OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..63),
        periodDuration                      INTEGER (1..64)
    }
}

MBMS-L1CombiningSchedule-512 ::=    SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..127)                        OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..127),
        periodDuration                      INTEGER (1..128)
    }
}

MBMS-L1CombiningSchedule-1024 ::=   SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..255)                        OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..255),
        periodDuration                      INTEGER (1..256)
    }
}

MBMS-L1CombiningSchedule ::=        CHOICE {
    cycleLength-32                      MBMS-L1CombiningSchedule-32,
    cycleLength-64                      MBMS-L1CombiningSchedule-64,
    cycleLength-128                     MBMS-L1CombiningSchedule-128,
    cycleLength-256                     MBMS-L1CombiningSchedule-256,
    cycleLength-512                     MBMS-L1CombiningSchedule-512,
    cycleLength-1024                    MBMS-L1CombiningSchedule-1024
}

MBMS-L1CombiningTransmTimeDiff ::=  INTEGER (0..3)

MBMS-L23Configuration ::=           CHOICE {
    sameAsCurrent                       SEQUENCE {
        currentCell-SCCPCH                  MBMS-SCCPCHIdentity,
        mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6
    },
    different                           SEQUENCE {
        transpCh-InfoCommonForAllTrCh       MBMS-CommonCCTrChIdentity,
        transpCHInformation                 MBMS-TrCHInformation-NeighbList
    }
}

MBMS-LogicalChIdentity ::=          INTEGER (1..15)

MBMS-MCCH-ConfigurationInfo-r6 ::=  SEQUENCE {
    accessInfoPeriodCoefficient         INTEGER (0..3),
    repetitionPeriodCoefficient         INTEGER (0..3),
    modificationPeriodCoefficient       INTEGER (7..10),
    rlc-Info                            RLC-Info-r6,
    tctf-Presence                       MBMS-TCTF-Presence                  OPTIONAL
```

```
}

MBMS-MICHConfigurationInfo-r6 ::=   SEQUENCE {
    michPowerOffset                     MBMS-MICHPowerOffset,
    mode                                CHOICE {
        fdd                                 SEQUENCE {
            channelisationCode256               ChannelisationCode256,
            ni-CountPerFrame                    MBMS-NI-CountPerFrame,
            sttd-Indicator                      BOOLEAN
        },
        tdd384                              SEQUENCE {
            timeslot                            TimeslotNumber,
            midambleShiftAndBurstType           MidambleShiftAndBurstType,
            channelisationCode                  DL-TS-ChannelisationCode,
            repetitionPeriodLengthOffset        RepPerLengthOffset-MICH     OPTIONAL,
            mbmsNotificationIndLength           MBMS-MICHNotificationIndLength  DEFAULT mn4
        },
        tdd128                              SEQUENCE {
            timeslot                            TimeslotNumber-LCR-r4,
            midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
            channelisationCodeList              SEQUENCE (SIZE (1..2)) OF
                                                    DL-TS-ChannelisationCode,
            repetitionPeriodLengthOffset        RepPerLengthOffset-MICH     OPTIONAL,
            mbmsNotificationIndLength           MBMS-MICHNotificationIndLength  DEFAULT mn4
        }
    }
}

MBMS-MICHNotificationIndLength ::=  ENUMERATED { mn4, mn8, mn16 }

MBMS-MICHPowerOffset ::=            INTEGER (-10..5)

MBMS-ModifedService-r6 ::=          SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-RequiredUEAction               MBMS-RequiredUEAction-Mod,
    mbms-PreferredFrequency             CHOICE {
        mcch                                MBMS-PFLIndex,
        dcch                                MBMS-PFLInfo
    }       OPTIONAL,
    continueMCCHReading                 BOOLEAN
}

MBMS-ModifedServiceList-r6 ::=      SEQUENCE (SIZE (1..maxMBMSservModif)) OF
                                        MBMS-ModifedService-r6

MBMS-MSCHConfigurationInfo-r6 ::=   SEQUENCE {
    mschShedulingInfo                   MBMS-MSCHSchedulingInfo             OPTIONAL,
    rlc-Info                            RLC-Info-r6                         OPTIONAL,
    tctf-Presence                       MBMS-TCTF-Presence                  OPTIONAL
}

MBMS-MSCHSchedulingInfo ::=         CHOICE {
    schedulingPeriod-32-Offset          INTEGER (0..31),
    schedulingPeriod-64-Offset          INTEGER (0..63),
    schedulingPeriod-128-Offset         INTEGER (0..127),
    schedulingPeriod-256-Offset         INTEGER (0..255),
    schedulingPeriod-512-Offset         INTEGER (0..511),
    schedulingPeriod-1024-Offset        INTEGER (0..1023)
}

MBMS-NeighbouringCellSCCPCH-r6 ::=  SEQUENCE {
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    rakeCombinableGroupId               MBMS-RakeCombinableGroupId          OPTIONAL,
    layer1Combining                     CHOICE {
        fdd                                 SEQUENCE {
            typeOfL1Combining                   MBMS-TypeOfL1Combining,
            mbms-L1CombiningSchedule            MBMS-L1CombiningSchedule    OPTIONAL
        },
        tdd                                 NULL
    }       OPTIONAL,
    mbms-L23Configuration               MBMS-L23Configuration
}

MBMS-NeighbouringCellSCCPCHList-r6 ::= SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        MBMS-NeighbouringCellSCCPCH-r6

MBMS-NI-CountPerFrame ::=           ENUMERATED { ni18, ni36, ni72, ni144 }
```

```
MBMS-NumberOfNeighbourCells ::=     INTEGER (0..32)

MBMS-PFLIndex ::=                   INTEGER (1..maxMBMS-Freq)

MBMS-PFLInfo ::=                    FrequencyInfo

MBMS-PhyChInformation-r6 ::=        SEQUENCE {
    mbms-CommonPhyChIdentity            MBMS-CommonPhyChIdentity,
    secondaryCCPCHInfo-MBMS             SecondaryCCPCHInfo-MBMS-r6
}

MBMS-PhyChInformationList-r6 ::=    SEQUENCE (SIZE (1..maxMBMS-CommonPhyCh)) OF
                                        MBMS-PhyChInformation-r6

MBMS-PL-ServiceRestrictInfo-r6 ::=  ENUMERATED { true }

MBMS-PreferredFreqRequest-r6 ::=    SEQUENCE {
    preferredFreqRequest                FrequencyInfo
}

MBMS-PreferredFrequencyInfo-r6 ::=  SEQUENCE {
    mbmsPreferredFrequency              INTEGER (1..maxMBMS-Freq),
    layerConvergenceInformation         CHOICE {
        mbms-Qoffset                        INTEGER (0..7),
        mbms-HCSoffset                      INTEGER (0..7)
    }
}

MBMS-PreferredFrequencyList-r6 ::=  SEQUENCE (SIZE (1..maxMBMS-Freq)) OF
                                        MBMS-PreferredFrequencyInfo-r6

MBMS-PTM-RBInformation-C ::=        SEQUENCE {
    rbInformation                       MBMS-CommonRBIdentity,
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity
}

MBMS-PTM-RBInformation-CList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                        MBMS-PTM-RBInformation-C

MBMS-PTM-RBInformation-N ::=        SEQUENCE {
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity,
    layer1-CombiningStatus              ENUMERATED { true }                 OPTIONAL
}

MBMS-PTM-RBInformation-NList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                        MBMS-PTM-RBInformation-N

MBMS-PTM-RBInformation-S ::=        SEQUENCE {
    rbInformation                       MBMS-CommonRBIdentity,
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity
}

MBMS-PTM-RBInformation-SList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                        MBMS-PTM-RBInformation-S

MBMS-RakeCombinableGroupId ::=      INTEGER (0..15)
```

3GPP TSG-RAN2 Meeting #47
Athens, Greece, 9th- 13th May, 2005

Tdoc ⌘ R2-051683

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2561** ⌘**rev** **1** ⌘ Current version: **6.5.0** ⌘

*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 ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	Addition of MBMS counting for UEs in Cell_PCH and Cell_FACH states and addition of UE requested p-t-p bearer establishment
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	04.04.05
Category:	⌘	**F**
Release:	⌘	REL-6

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: ⌘ To add MBMS counting for Cell_PCH and Cell_FACH states and to add UE request of MBMS p-t-p bearer establishment.

Summary of change: ⌘ Addition of counting for the Cell_PCH and Cell_FACH states:

- In 8.3.1.2 changes to the scope of the cause value 'MBMS reception is made to include the Cell_PCH and Cell_FACH states.
- In 8.7.4 procedure changes are added to include counting for Cell_PCH and Cell_FACH. It is specified that UEs that are in the URA_PCH, Cell_PCH and Cell_FACH states should not apply the probability factor test unless their state is identified in the new parameter 'Connected mode counting scope'.

  The name of the probability factor 'Access probability factor-URA_PCH' is changed to 'Access probability factor-connected' to reflect its wider applicability.

  A constraint is added that the UE should not make a further cell update for a single session within the current modification period.
- In 10.2.16e the new parameter 'Connected mode counting scope' is added. This indicates whether the MBMS Access Information message applies to UEs that are in URA_PCH, Cell_PCH and/ or Cell_FACH states.

Addition of UE requesting p-t-p establishment:

- In 8..3.1.2 cell update to receive an MBMS service is removed from the scope of 'MBMS reception'. A new cause value 'MBMS ptp RB request' and behaviour for UEs in URA_PCH and Cell_PCH states are added.
- In 8.6.9.6 the 'required UE action 'Establish PMM connection' is replaced by

		'Request PTP RB'. The indicated cause is identified as 'MBMS ptp RB request' and text changes are made to describe the revised UE behaviour. · In 10.2.16j and 10.2.16m the required UE action 'Establish PMM connection' is replaced by 'Request PTP RB'. · In 10.3.3.3 the new cause value 'MBMS ptp RB request' is added. · In 10.3.3.11 the new cause value 'MBMS ptp RB request' is added. In revision 1 of this CR, the following additional changes are included (marked blue): • Clarification is added that the UE shall initiate the p-t-p RB establishment only once per modification period
Consequences if not approved:	⌘	The corrections to add MBMS counting for UEs in Cell_PCH and Cell_FACH states and MBMS p-t-p bearer establishment agreed at WG2#46 will not be described within the specification.

Clauses affected:	⌘	8.3.1.2, 8.6.9.6, 8.7.4, 10.2.16j, 10.2.16m, 10.3.3.3, 10.3.3.11, 10.3.9a.11, 11.3			
		Y	**N**		
Other specs	⌘	**X**		Other core specifications	⌘ CN1. An additional cause value has been added to uplink CCCH messages.
affected:			**X**	Test specifications	
			X	O&M Specifications	
Other comments:	⌘	The MBMS specific RRC connection establishment (T318, single attempt), are specified to apply only for the counting response case ie. cause value 'MBMS reception' and not for the UE initiated p-t-p request			

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.3.1.2 Initiation

A UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

2> if the UE is in URA_PCH or CELL_PCH state; and

2> if the UE has uplink RLC data PDU or uplink RLC control PDU on RB1 or upwards to transmit:

3> perform cell update using the cause "uplink data transmission".

1> Paging response:

2> if the criteria for performing cell update with the cause specified above in the current subclause are not met; and

2> if the UE in URA_PCH or CELL_PCH state, receives a PAGING TYPE 1 message fulfilling the conditions for initiating a cell update procedure specified in subclause 8.1.2.3:

3> perform cell update using the cause "paging response".

1> Radio link failure:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met:

3> if the UE is in CELL_DCH state and the criteria for radio link failure are met as specified in subclause 8.5.6; or

3> if the transmission of the UE CAPABILITY INFORMATION message fails as specified in subclause 8.1.6.6:

4> perform cell update using the cause "radio link failure".

1> Re-entering service area:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and

2> if the UE is in CELL_FACH or CELL_PCH state; and

2> if the UE has been out of service area and re-enters service area before T307 or T317 expires:

3> perform cell update using the cause "re-entering service area".

1> RLC unrecoverable error:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and

2> if the UE detects RLC unrecoverable error [16] in an AM RLC entity:

3> perform cell update using the cause "RLC unrecoverable error".

1> Cell reselection:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met:

3> if the UE is in CELL_FACH or CELL_PCH state and the UE performs cell re-selection; or

3> if the UE is in CELL_FACH state and the variable C_RNTI is empty:

4> perform cell update using the cause "cell reselection".

1> Periodical cell update:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and

2> if the UE is in CELL_FACH or CELL_PCH state; and

2> if the timer T305 expires; and

2> if the criteria for "in service area" as specified in subclause 8.5.5.2 are fulfilled; and

2> if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":

3> perform cell update using the cause "periodical cell update".

1> MBMS reception:

2> if the UE is in URA_PCH, Cell_PCH or Cell_FACH state; and

2> if the UE should perform cell update for MBMS counting as specified in subclause 8.7.4 ~~or if the UE should perform cell update to receive an MBMS service as specified in subclause 8.6.9.4~~:

3> perform cell update using the cause "MBMS reception".

1> MBMS ptp RB request:

2> if the UE is in URA_PCH or Cell_PCH state; and

2> if the UE should perform cell update for MBMS ptp radio bearer request as specified in 8.6.9.6 :

3> perform cell update using the cause "MBMS ptp RB request".

A UE in URA_PCH state shall initiate the URA update procedure in the following cases:

1> URA reselection:

2> if the UE detects that the current URA assigned to the UE, stored in the variable URA_IDENTITY, is not present in the list of URA identities in system information block type 2; or

2> if the list of URA identities in system information block type 2 is empty; or

2> if the system information block type 2 can not be found:

3> perform URA update using the cause "change of URA".

1> Periodic URA update:

2> if the criteria for performing URA update with the causes as specified above in the current subclause are not met; and

2> if the timer T305 expires while the UE is in the service area; and

2> if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":

3> perform URA update using the cause "periodic URA update".

When initiating the URA update or cell update procedure, the UE shall:

1> stop timer T305;

1> if the UE is in CELL_DCH state:

2> in the variable RB_TIMER_INDICATOR, set the IE "T314 expired" and the IE "T315 expired" to FALSE;

2> if the stored values of the timer T314 and timer T315 are both equal to zero; or

2> if the stored value of the timer T314 is equal to zero and there are no radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315":

3> release all its radio resources;

3> indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;

3> clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;

3> clear the variable ESTABLISHED_RABS;

3> enter idle mode;

3> perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;

3> and the procedure ends.

2> if the stored value of the timer T314 is equal to zero:

3> release all radio bearers, associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";

3> in the variable RB_TIMER_INDICATOR set the IE "T314 expired" to TRUE.

2> if the stored value of the timer T315 is equal to zero:

3> release all radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315";

3> in the variable RB_TIMER_INDICATOR set the IE "T315 expired" to TRUE.

2> if the stored value of the timer T314 is greater than zero:

3> if there are radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314":

4> start timer T314.

3> if there are no radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314" or "useT315":

4> start timer T314.

2> if the stored value of the timer T315 is greater than zero:

3> if there are radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315":

4> start timer T315.

2> for the released radio bearer(s):

3> delete the information about the radio bearer from the variable ESTABLISHED_RABS;

3> when all radio bearers belonging to the same radio access bearer have been released:

4> indicate local end release of the radio access bearer to upper layers using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED_RABS;

4> delete all information about the radio access bearer from the variable ESTABLISHED_RABS.

2> move to CELL_FACH state;

2> select a suitable UTRA cell on the current frequency according to [4];

2> select PRACH according to subclause 8.5.17;

2> select Secondary CCPCH according to subclause 8.5.19;

2> use the transport format set given in system information as specified in subclause 8.6.5.1;

2> set the variable ORDERED_RECONFIGURATION to FALSE.

1> set the variables PROTOCOL_ERROR_INDICATOR, FAILURE_INDICATOR, UNSUPPORTED_CONFIGURATION and INVALID_CONFIGURATION to FALSE;

1> set the variable CELL_UPDATE_STARTED to TRUE;

1> if HS-DSCH is configured:

2> clear any stored IE "Downlink HS-PDSCH information";

2> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

1> if E-DCH is configured:

2> clear any stored IE "E-DCH information";

2> determine the value for the E_DCH_TRANSMISSION variable and take the corresponding actions as described in subclause 8.5.28.

1> if the UE is not already in CELL_FACH state:

2> move to CELL_FACH state;

2> select PRACH according to subclause 8.5.17;

2> select Secondary CCPCH according to subclause 8.5.19;

2> use the transport format set given in system information as specified in subclause 8.6.5.1.

1> if the UE performs cell re-selection:

2> clear the variable C_RNTI; and

2> stop using that C_RNTI just cleared from the variable C_RNTI in MAC.

1> set CFN in relation to SFN of current cell according to subclause 8.5.15;

1> in case of a cell update procedure:

2> set the contents of the CELL UPDATE message according to subclause 8.3.1.3;

2> submit the CELL UPDATE message for transmission on the uplink CCCH.

1> in case of a URA update procedure:

2> set the contents of the URA UPDATE message according to subclause 8.3.1.3;

2> submit the URA UPDATE message for transmission on the uplink CCCH.

1> set counter V302 to 1;

1> start timer T302 when the MAC layer indicates success or failure in transmitting the message.

8.6.9.6 MBMS Required UE action

If the IE "MBMS required UE action" is included the UE shall:

1> if the "MBMS required UE action" is set to 'None':

2> take no action with respect to this IE.

1> if the IE "MBMS required UE action" is set to 'Acquire counting info':

2> perform the MBMS counting procedure as specified in subclause 8.7.4;

NOTE: If upper layers indicate that an MBMS transmission has already been received correctly, the UE will continue as if the information about the concerned MBMS transmission was not included in the message. This implies that the UE does not respond to counting for a transmission already received correctly.

1> if the IE "MBMS required UE action" is set to 'Acquire PTM RB info':

2> continue acquiring the MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION messages without delaying reading of MCCH until the next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3

2> act upon the MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION message, if received, in accordance with subclause 8.7.5;

1> if the IE "MBMS required UE action" is set to 'Request~~Establish~~ PTP RB~~MM connection~~':

2> if the UE is in idle mode:

3> indicate to upper layers that ~~action~~establishment of an RRC connection is required to receive the concerned MBMS service~~.~~ with the establishment cause set to 'MBMS ptp RB request', unless the UE has already requested p-t-m RB establishment in the current modification period.

2> if the UE is in URA_PCH or Cell_PCH states:

3> perform a cell update procedure with cause "MBMS ptp RB request~~reception~~", as specified in subclause 8.3.1.2, unless the UE has already requested p-t-m RB establishment in the current modification period.

2> if the UE is in CELL_DCH:

3> indicate to upper layers that establishment of an PMM connection is required to receive the concerned MBMS service with the establishment cause set to 'MBMS ptp RB request'.

1> if the IE "MBMS required UE action" is set to 'Release PTM RB:

2> stop receiving the concerned MBMS service and clear all service specific information applicable for the concerned service

8.7.4 MBMS counting

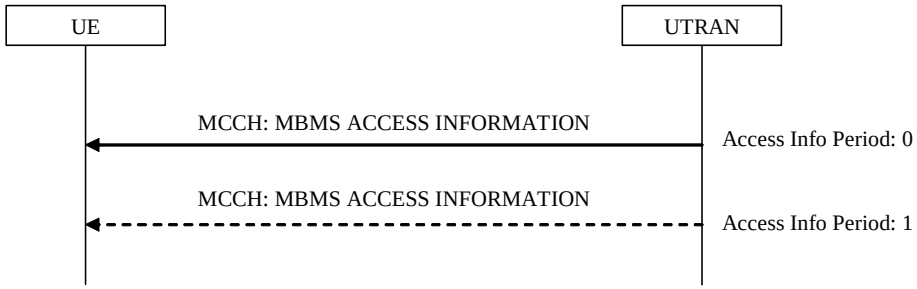

Figure 8.7.4-1: MBMS counting, normal

8.7.4.1 General

The MBMS counting procedure is used by the UE to inform UTRAN about its interest to receive an MBMS transmission. The procedure applies to UEs supporting MBMS that are in idle mode or in connected mode~~, URA_PCH state~~. In

connected mode the procedure applies to the URA_PCH, Cell_PCH and/ or Cell_FACH states dependent upon the value of the IE "Connected mode counting scope".

8.7.4.2 Initiation

The UE initiates the MBMS counting procedure for an MBMS transmission upon receiving an MBMS MODIFIED SERVICES or MBMS UNMODIFIED SERVICES message including IE "MBMS required UE action" with the value set to 'Acquire counting info'.

8.7.4.3 Reception of the MBMS ACCESS INFORMATION

The UE shall acquire the MBMS ACCESS INFORMATION message without delaying reading of MCCH until the next modification period in accordance with subclause 8.7.1.3.

The UE behaviour upon receiving an MBMS ACCESS INFORMATION message that is contained in more than one TTI is not specified.

Upon receiving the MBMS ACCESS INFORMATION message including one or more MBMS service(s) it has joined, the UE shall for each joined service:

1> if the UE is in idle mode:

2~~1~~> ~~——~~draw a random number, "rand", uniformly distributed in the range: 0 ≤ rand < 1

2~~1~~> ~~——~~if ~~the UE is in idle mode and~~ 'rand' is lower than the value indicated by the IE 'Access probability factor-Idle' for the concerned service:

3~~2~~> ~~—~~indicate to upper layers that establishment of an RRC connection ~~action~~ is required to receive the concerned MBMS service~~;~~, with the establishment cause set to 'MBMS reception.

3~~2~~> if the above con~~d~~dition applies for more than one service, initiate a single indication to upper layers;

3~~2~~> ~~—~~the procedure ends.

2> otherwise:

3> If the message triggering the MBMS counting procedure included the IE "Continue MCCH reading" with a value set to TRUE:

4> continue acquiring further MBMS ACCESS INFORMATION messages without delaying reading of MCCH until the next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3.

3> otherwise:

4> continue acquiring further MBMS ACCESS INFORMATION messages without delaying reading of MCCH until the next modification period and with stopping at the end of the modification period, in accordance with subclause 8.7.1.3.

1> if the UE is in URA_PCH state, Cell_PCH or Cell_FACH state and the IE "Connected mode counting scope" indicates that counting is applicable for this UE state:

2> draw a random number, "rand", uniformly distributed in the range: 0 ≤ rand < 1

2> if 'rand' is lower than the value indicated by the IE 'Access probability factor-connected~~URA_PCH~~' for the concerned service:

3~~2~~> ~~—~~if a cell update has not been successfully transmitted for this service in the current modification period:

4~~32~~> ~~——~~initiate the cell update procedure with 'Cell update cause' set to "MBMS reception", in accordance with subclause 8.3.1;

4~~32~~> if the above con~~d~~dition applies for more than one service, initiate a single cell update;

4~~32~~> ~~——~~the procedure ends;

2~~1~~> ~~——~~otherwise:

3~~2~~> If the message triggering the MBMS counting procedure included the IE "Continue MCCH reading" with a value set to TRUE:

4~~3~~> continue acquiring further MBMS ACCESS INFORMATION messages without delaying reading of MCCH until the next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3.

3~~2~~> otherwise:

4~~3~~> continue acquiring further MBMS ACCESS INFORMATION messages without delaying reading of MCCH until the next modification period and with stopping at the end of the modification period, in accordance with subclause 8.7.1.3.

1> otherwise:

2> the procedure ends;

Upon receiving the MBMS ACCESS INFORMATION message not including an MBMS service(s) the UE has joined:

1> the procedure ends;

10.2.16e MBMS ACCESS INFORMATION

This message is transmitted periodically by UTRAN to inform UEs that have joined a particular MBMS service about the need to establish an RRC connection. While the message contents may change within a modification period, all occurances of the information within a modification period concern the same MBMS service(s).

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Service list	MP	1 to <maxMBMSservCount>			REL-6
>MBMS short transmission ID	MP		MBMS Short transmission identity 10.3.9a.10	Reference/ index to a transmission listed in the MBMS MODIFIED SERVICES INFORMATION or MBMS UNMODIFIED SERVICES INFORMATION	REL-6
>Access probability factor - Idle	MP		Integer (0 to 960 by step of 32, 1000)	Access probability factor for UEs in idle mode. The actual Access Probability (AP) is a function of the Access Probability Factor (APF): $AP(APF) = 2^{-(APF/100)}$	REL-6
>Access probability factor – connected~~URA_PCH~~	MD		Integer (0 to 960 by step of 32, 1000)	Access probability factor for UEs in connected mode~~URA_PCH~~. The actual Access Probability (AP) is a function of the Access Probability Factor (APF): $AP(APF) = 2^{-(APF/100)}$ Default value is the value included in IE "Access probability factor - Idle"	REL-6
>Connected mode counting scope	MP				REL-6
>>URA_PCH	MP		BOOLEAN	TRUE means that UEs in URA_PCH state shall participate in counting	REL-6
>>CELL_PCH	MP		BOOLEAN	TRUE means that UEs in CELL_PCH state shall participate in counting	REL-6
>> CELL_FACH	MP		BOOLEAN	TRUE means that UEs in CELL_FACH state shall participate in counting	REL-6

10.2.16j MBMS MODIFIED SERVICES INFORMATION

This information is transmitted periodically by UTRAN to inform UEs about a change applicable for one or more MBMS services available in the current cell and possibly in neighbouring cells.

Logical channel: MCCH, DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Modified service list	OP	1.. <maxMBMSservModif>			REL-6
>MBMS Transmission identity	MP		MBMS Transmission identity 10.3.9a.12		REL-6
>MBMS required UE action	MP		Enumerated (None, Acquire counting info, Acquire PTM RB info, RequestEstablish PTPMM RBconnection, Release PTM RB)	Indicates required UE action upon receiving the message. When sent on the DCCH, only the following values apply: None (FLC), Acquire PTM RB info, RequestEstablish PTPMM RBconnection).	REL-6
>MBMS preferred frequency	OP			Indicates the frequency that UEs shall consider as the preferred frequency layer for cell re-selection during a session for an MBMS service the UE has joined, as specified in [25.304] .	REL-6
>>PFL index	CV-*MCCH*		Integer (1.. <maxMBMS-Freq>)	Index pointing to an entry in the list included in MBMS GENERAL INFORMATION.	REL-6
>>PFL info	CV-*DCCH*		Frequency info 10.3.6.36		REL-6
>Continue MCCH reading	MP		BOOLEAN	MCCH in- band notification. Indicates whether or not the UE should continue reading MCCH in the next modification period. Not applicable when sent on the DCCH	REL-6
MBMS re- aquire MCCH	MP		BOOLEAN		REL-6
End of modified MCCH information	OP		Integer (1..15)	Final TTI including MCCH messages with different content than in the previous modification period	REL-6

Condition	Explanation
MCCH	This IE is mandatory present if the message is sent via MCCH and not needed otherwise.
DCCH	This IE is mandatory present if the message is sent via DCCH and not needed otherwise.

10.2.16m MBMS UNMODIFIED SERVICES INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the MBMS services, available in the current cell and possibly in neighbouring cells, that have not changed. The message is repeated every repetition period while its contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message type	MP		Message Type	
Unmodified services list	OP	1 to <maxMBMSservUnmodif>		
>MBMS Transmission identity	MP		MBMS Transmission identity 10.3.9a.12	
>MBMS required UE action	MP		Enumerated (None, Acquire PTM RB info, Request~~Establish~~ PTP~~MM~~ RB~~connection~~)	Indication of the UE action required to receive the service:
>MBMS preferred frequency	OP		Integer (1..<maxMBMS-Freq>)	Information about the frequency that UEs shall consider as the preferred frequency layer for cell re-selection during a session for an MBMS service the UE has joined, as specified in [25.304] . Index pointing to an entry in the list included in MBMS GENERAL INFORMATION

10.3.3.3 Cell update cause

Indicates the cause for cell update.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell update cause	MP		Enumerated (cell reselection, periodical cell update, uplink data transmission, paging response, re-entered service area, radio link failure, RLC unrecoverable error, MBMS reception, MBMS ptp RB request)	One spare value is needed.

10.3.3.11 Establishment cause

Cause for an RRC connection establishment request.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Establishment cause	MP		Enumerated(Originating Conversational Call, Originating Streaming Call, Originating Interactive Call, Originating Background Call, Originating Subscribed traffic Call, Terminating Conversational Call, Terminating Streaming Call, Terminating Interactive Call, Terminating Background Call, Emergency Call, Inter-RAT cell re-selection, Inter-RAT cell change order, Registration,	Eleven spare values are needed.

			Detach, Originating High Priority Signalling, Originating Low Priority Signalling, Call re-establishment, Terminating High Priority Signalling, Terminating Low Priority Signalling, Terminating – cause unknown, MBMS reception, MBMS ptp RB request)	

11.3 Information element definitions

```
InformationElements DEFINITIONS AUTOMATIC TAGS ::=


-- **************************************************
--
--     USER EQUIPMENT INFORMATION ELEMENTS (10.3.3)
--
-- **************************************************

AccessStratumReleaseIndicator ::=   ENUMERATED {
                                        rel-4, rel-5, rel-6, spare13,
                                        spare12, spare11, spare10, spare9, spare8,
                                        spare7, spare6, spare5, spare4, spare3,
                                        spare2, spare1 }

-- TABULAR : for ActivationTime, value 'now' always appear as default, and is encoded
-- by absence of the field
ActivationTime ::=                  INTEGER (0..255)

BackoffControlParams ::=            SEQUENCE {
    n-AP-RetransMax                     N-AP-RetransMax,
    n-AccessFails                       N-AccessFails,
    nf-BO-NoAICH                        NF-BO-NoAICH,
    ns-BO-Busy                          NS-BO-Busy,
    nf-BO-AllBusy                       NF-BO-AllBusy,
    nf-BO-Mismatch                      NF-BO-Mismatch,
    t-CPCH                              T-CPCH
}

C-RNTI ::=                          BIT STRING (SIZE (16))

CapabilityUpdateRequirement ::=     SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement  BOOLEAN,
    -- ue-RadioCapabilityTDDUpdateRequirement is for 3.84Mcps TDD update requirement
    ue-RadioCapabilityTDDUpdateRequirement  BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

CapabilityUpdateRequirement-r4-ext ::= SEQUENCE {
    ue-RadioCapabilityUpdateRequirement-TDD128  BOOLEAN
}

CapabilityUpdateRequirement-r4 ::=  SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement-FDD  BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD384   BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD128   BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

-- If the IE CellUpdateCause has the value 'cellUpdateCause-ext', the actual value is
-- defined in the IE CellUpdateCause-ext.
CellUpdateCause ::=                 ENUMERATED {
                                        cellReselection,
                                        periodicalCellUpdate,
                                        uplinkDataTransmission,
                                        utran-pagingResponse,
                                        re-enteredServiceArea,
                                        radiolinkFailure,
                                        rlc-unrecoverableError,
                                        cellUpdateCause-ext }

-- The IE CellUpdateCause-ext shall be present, if the IE CellUpdateCause has the
-- value 'cellUpdateCause-ext'.
CellUpdateCause-ext ::=             ENUMERATED {
                                        mbms-Reception,
                                        spare3mbms-PTP-RB-Request, spare2, spare1 }

ChipRateCapability ::=              ENUMERATED {
                                        mcps3-84, mcps1-28 }

CipheringAlgorithm ::=              ENUMERATED {
                                        uea0, uea1 }
```

```
CipheringModeCommand ::=            CHOICE {
    startRestart                        CipheringAlgorithm,
    dummy                       NULL
}

CipheringModeInfo ::=               SEQUENCE {
    -- TABULAR: The ciphering algorithm is included in the CipheringModeCommand.
    cipheringModeCommand                CipheringModeCommand,
    activationTimeForDPCH               ActivationTime                      OPTIONAL,
    rb-DL-CiphActivationTimeInfo        RB-ActivationTimeInfoList           OPTIONAL
}

CN-DRX-CycleLengthCoefficient ::=   INTEGER (6..9)

CN-PagedUE-Identity ::=             CHOICE {
    imsi-GSM-MAP                        IMSI-GSM-MAP,
    tmsi-GSM-MAP                        TMSI-GSM-MAP,
    p-TMSI-GSM-MAP                      P-TMSI-GSM-MAP,
    imsi-DS-41                          IMSI-DS-41,
    tmsi-DS-41                          TMSI-DS-41,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

CompressedModeMeasCapability ::=    SEQUENCE {
    fdd-Measurements                    BOOLEAN,
    -- TABULAR: The IEs tdd-Measurements, gsm-Measurements and multiCarrierMeasurements
    -- are made optional since they are conditional based on another information element.
    -- Their absence corresponds to the case where the condition is not true.
    tdd-Measurements                    BOOLEAN                             OPTIONAL,
    gsm-Measurements                    GSM-Measurements                    OPTIONAL,
    multiCarrierMeasurements            BOOLEAN                             OPTIONAL
}

CompressedModeMeasCapability-LCR-r4 ::= SEQUENCE {
    tdd128-Measurements                     BOOLEAN                        OPTIONAL
}

CompressedModeMeasCapabFDDList ::=  SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        CompressedModeMeasCapabFDD

CompressedModeMeasCapabFDDList2 ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        CompressedModeMeasCapabFDD2

CompressedModeMeasCapabFDDList-ext ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        CompressedModeMeasCapabFDD-ext

CompressedModeMeasCapabFDD ::=      SEQUENCE {
    radioFrequencyBandFDD               RadioFrequencyBandFDD   OPTIONAL,
    dl-MeasurementsFDD                  BOOLEAN,
    ul-MeasurementsFDD                  BOOLEAN
}

CompressedModeMeasCapabFDD2 ::=     SEQUENCE {
    -- UE may omit both IEs if this IE indicates the compressed mode capability within the same
    -- frequency band. Otherwise, the UE shall include either one of the following OPTIONAL IEs.
    radioFrequencyBandFDD               RadioFrequencyBandFDD   OPTIONAL,
    radioFrequencyBandFDD2              RadioFrequencyBandFDD2  OPTIONAL,
    dl-MeasurementsFDD                  BOOLEAN,
    ul-MeasurementsFDD                  BOOLEAN
}

CompressedModeMeasCapabFDD-ext ::=      SEQUENCE {
    radioFrequencyBandFDD2              RadioFrequencyBandFDD2,
    dl-MeasurementsFDD                  BOOLEAN,
    ul-MeasurementsFDD                  BOOLEAN
}

CompressedModeMeasCapabTDDList ::=  SEQUENCE (SIZE (1..maxFreqBandsTDD)) OF
                                        CompressedModeMeasCapabTDD

CompressedModeMeasCapabTDD ::=      SEQUENCE {
    radioFrequencyBandTDD               RadioFrequencyBandTDD,
    dl-MeasurementsTDD                  BOOLEAN,
    ul-MeasurementsTDD                  BOOLEAN
}
```

```
CompressedModeMeasCapabGSMList ::=  SEQUENCE (SIZE (1..maxFreqBandsGSM)) OF
                                        CompressedModeMeasCapabGSM

CompressedModeMeasCapabGSM ::=      SEQUENCE {
    radioFrequencyBandGSM               RadioFrequencyBandGSM,
    dl-MeasurementsGSM                  BOOLEAN,
    ul-MeasurementsGSM                  BOOLEAN
}

CompressedModeMeasCapabMC ::=       SEQUENCE {
    dl-MeasurementsMC                   BOOLEAN,
    ul-MeasurementsMC                   BOOLEAN
}

CPCH-Parameters ::=                 SEQUENCE {
    initialPriorityDelayList            InitialPriorityDelayList            OPTIONAL,
    backoffControlParams                BackoffControlParams,
    -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    powerControlAlgorithm               PowerControlAlgorithm,
    dl-DPCCH-BER                        DL-DPCCH-BER
}

DL-CapabilityWithSimultaneousHS-DSCHConfig ::=  ENUMERATED{kbps32, kbps64, kbps128, kbps384}

DL-DPCCH-BER ::=                    INTEGER (0..63)

DL-PhysChCapabilityFDD ::=          SEQUENCE {
    maxNoDPCH-PDSCH-Codes               INTEGER (1..8),
    maxNoPhysChBitsReceived             MaxNoPhysChBitsReceived,
    supportForSF-512                    BOOLEAN,
    supportOfPDSCH                      BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception   SimultaneousSCCPCH-DPCH-Reception
}

DL-PhysChCapabilityFDD-v380ext ::=          SEQUENCE {
    supportOfDedicatedPilotsForChEstimation     SupportOfDedicatedPilotsForChEstimation     OPTIONAL
}

SupportOfDedicatedPilotsForChEstimation ::=         ENUMERATED { true }

DL-PhysChCapabilityTDD ::=          SEQUENCE {
    maxTS-PerFrame                      MaxTS-PerFrame,
    maxPhysChPerFrame                   MaxPhysChPerFrame,
    minimumSF                           MinimumSF-DL,
    supportOfPDSCH                      BOOLEAN,
    maxPhysChPerTS                      MaxPhysChPerTS
}

DL-PhysChCapabilityTDD-LCR-r4 ::=   SEQUENCE {
    maxTS-PerSubFrame                   MaxTS-PerSubFrame-r4,
    maxPhysChPerFrame                   MaxPhysChPerSubFrame-r4,
    minimumSF                           MinimumSF-DL,
    supportOfPDSCH                      BOOLEAN,
    maxPhysChPerTS                      MaxPhysChPerTS,
    supportOf8PSK                       BOOLEAN
}

DL-TransChCapability ::=            SEQUENCE {
    maxNoBitsReceived                   MaxNoBits,
    maxConvCodeBitsReceived             MaxNoBits,
    turboDecodingSupport                TurboSupport,
    maxSimultaneousTransChs             MaxSimultaneousTransChsDL,
    maxSimultaneousCCTrCH-Count         MaxSimultaneousCCTrCH-Count,
    maxReceivedTransportBlocks          MaxTransportBlocksDL,
    maxNumberOfTFC                      MaxNumberOfTFC-DL,
    maxNumberOfTF                       MaxNumberOfTF
}

DRAC-SysInfo ::=                    SEQUENCE {
    transmissionProbability             TransmissionProbability,
    maximumBitRate                      MaximumBitRate
}

DRAC-SysInfoList ::=                SEQUENCE (SIZE (1..maxDRACclasses)) OF
                                        DRAC-SysInfo
```

```
DSCH-RNTI ::=                       BIT STRING (SIZE (16))

E-RNTI ::=                          BIT STRING (SIZE (16))

ESN-DS-41 ::=                       BIT STRING (SIZE (32))

EstablishmentCause ::=              ENUMERATED {
                                        originatingConversationalCall,
                                        originatingStreamingCall,
                                        originatingInteractiveCall,
                                        originatingBackgroundCall,
                                        originatingSubscribedTrafficCall,
                                        terminatingConversationalCall,
                                        terminatingStreamingCall,
                                        terminatingInteractiveCall,
                                        terminatingBackgroundCall,
                                        emergencyCall,
                                        interRAT-CellReselection,
                                        interRAT-CellChangeOrder,
                                        registration,
                                        detach,
                                        originatingHighPrioritySignalling,
                                        originatingLowPrioritySignalling,
                                        callRe-establishment,
                                        terminatingHighPrioritySignalling,
                                        terminatingLowPrioritySignalling,
                                        terminatingCauseUnknown,
                                        mbms-Reception,
                                        spare11mbms-PTP-RB-Request,
                                        spare10,
                                        spare9,
                                        spare8,
                                        spare7,
                                        spare6,
                                        spare5,
                                        spare4,
                                        spare3,
                                        spare2,
                                        spare1 }



------------------------xxxx-------------------------


-- **************************************************
--
--     MBMS INFORMATION ELEMENTS (10.3.9a)
--
-- **************************************************

MBMS-AccessProbabilityFactor ::=    ENUMERATED {
                                        apf0, apf32, apf64, apf96, apf128, apf160, apf192,
                                        apf224, apf256, apf288, apf320, apf352, apf384, apf416,
                                        apf448, apf480, apf512, apf544, apf576, apf608, apf640,
                                        apf672, apf704, apf736, apf768, apf800, apf832, apf864,
                                        apf896, apf928, apf960, apf1000 }

MBMS-CellGroupIdentity-r6 ::=       BIT STRING (SIZE (12))

MBMS-CommonCCTrChIdentity ::=       INTEGER (1..32)

MBMS-CommonPhyChIdentity ::=        INTEGER (1..32)

MBMS-CommonRBIdentity ::=           INTEGER (1..32)

MBMS-CommonRBInformation-r6 ::=     SEQUENCE {
    commonRBIdentity                    MBMS-CommonRBIdentity,
    pdcp-Info                           PDCP-Info-r4,
    rlc-Info                            RLC-Info-r6
}

MBMS-CommonRBInformationList-r6 ::= SEQUENCE (SIZE (1..maxMBMS-CommonRB)) OF
                                        MBMS-CommonRBInformation-r6

MBMS-CommonTrChIdentity ::=         INTEGER (1..32)
```

```
MBMS-ConnectedModeCountingScope ::= SEQUENCE {
    countingForUraPCH                               BOOLEAN,
    countingForCellPCH                              BOOLEAN,
    countingForCellFACH                             BOOLEAN
}


MBMS-CurrentCell-SCCPCH-r6 ::=      SEQUENCE {
    sccpchIdentity                      MBMS-SCCPCHIdentity                 OPTIONAL,
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    transpCh-InfoCommonForAllTrCh       MBMS-CommonCCTrChIdentity,
    transpCHInformation                 MBMS-TrCHInformation-CommList
}

MBMS-CurrentCell-SCCPCHList-r6 ::=  SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        MBMS-CurrentCell-SCCPCH-r6

MBMS-FACHCarryingMTCH-List ::=      SEQUENCE (SIZE (1..maxFACHPCH)) OF
                                            TransportFormatSet

MBMS-JoinedInformation-r6 ::=       SEQUENCE {
    p-TMSI                              P-TMSI-GSM-MAP                      OPTIONAL
}

MBMS-L1CombiningSchedule-32 ::=     SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..7)                      OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..7),
        periodDuration                      INTEGER (1..8)
    }
}

MBMS-L1CombiningSchedule-64 ::=     SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..15)                     OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..15),
        periodDuration                      INTEGER (1..16)
    }
}

MBMS-L1CombiningSchedule-128 ::=    SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..31)                     OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..31),
        periodDuration                      INTEGER (1..32)
    }
}

MBMS-L1CombiningSchedule-256 ::=    SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..63)                     OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..63),
        periodDuration                      INTEGER (1..64)
    }
}

MBMS-L1CombiningSchedule-512 ::=    SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..127)                        OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..127),
        periodDuration                      INTEGER (1..128)
    }
}

MBMS-L1CombiningSchedule-1024 ::=   SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..255)                        OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..255),
        periodDuration                      INTEGER (1..256)
    }
```

```
}

MBMS-L1CombiningSchedule ::=        CHOICE {
    cycleLength-32                      MBMS-L1CombiningSchedule-32,
    cycleLength-64                      MBMS-L1CombiningSchedule-64,
    cycleLength-128                     MBMS-L1CombiningSchedule-128,
    cycleLength-256                     MBMS-L1CombiningSchedule-256,
    cycleLength-512                     MBMS-L1CombiningSchedule-512,
    cycleLength-1024                    MBMS-L1CombiningSchedule-1024
}

MBMS-L1CombiningTransmTimeDiff ::=  INTEGER (0..3)

MBMS-L23Configuration ::=           CHOICE {
    sameAsCurrent                       SEQUENCE {
        currentCell-SCCPCH                  MBMS-SCCPCHIdentity,
        mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6
    },
    different                           SEQUENCE {
        transpCh-InfoCommonForAllTrCh       MBMS-CommonCCTrChIdentity,
        transpCHInformation                 MBMS-TrCHInformation-NeighbList
    }
}

MBMS-LogicalChIdentity ::=          INTEGER (1..15)

MBMS-MCCH-ConfigurationInfo-r6 ::=  SEQUENCE {
    accessInfoPeriodCoefficient         INTEGER (0..3),
    repetitionPeriodCoefficient         INTEGER (0..3),
    modificationPeriodCoefficient       INTEGER (7..10),
    rlc-Info                            RLC-Info-r6,
    tctf-Presence                       MBMS-TCTF-Presence                  OPTIONAL
}

MBMS-MICHConfigurationInfo-r6 ::=   SEQUENCE {
    michPowerOffset                     MBMS-MICHPowerOffset,
    mode                                CHOICE {
        fdd                                 SEQUENCE {
            channelisationCode256               ChannelisationCode256,
            ni-CountPerFrame                    MBMS-NI-CountPerFrame,
            sttd-Indicator                      BOOLEAN
        },
        tdd384                              SEQUENCE {
            timeslot                            TimeslotNumber,
            midambleShiftAndBurstType           MidambleShiftAndBurstType,
            channelisationCode                  DL-TS-ChannelisationCode,
            repetitionPeriodLengthOffset        RepPerLengthOffset-MICH     OPTIONAL,
            mbmsNotificationIndLength           MBMS-MICHNotificationIndLength  DEFAULT mn4
        },
        tdd128                              SEQUENCE {
            timeslot                            TimeslotNumber-LCR-r4,
            midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
            channelisationCodeList              SEQUENCE (SIZE (1..2)) OF
                                                    DL-TS-ChannelisationCode,
            repetitionPeriodLengthOffset        RepPerLengthOffset-MICH     OPTIONAL,
            mbmsNotificationIndLength           MBMS-MICHNotificationIndLength  DEFAULT mn4
        }
    }
}

MBMS-MICHNotificationIndLength ::=  ENUMERATED { mn4, mn8, mn16 }

MBMS-MICHPowerOffset ::=            INTEGER (-10..5)

MBMS-ModifedService-r6 ::=          SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-RequiredUEAction               MBMS-RequiredUEAction-Mod,
    mbms-PreferredFrequency             CHOICE {
        mcch                                MBMS-PFLIndex,
        dcch                                MBMS-PFLInfo
    }       OPTIONAL,
    continueMCCHReading                 BOOLEAN
}

MBMS-ModifedServiceList-r6 ::=      SEQUENCE (SIZE (1..maxMBMSservModif)) OF
                                        MBMS-ModifedService-r6
```

```
MBMS-MSCHConfigurationInfo-r6 ::=   SEQUENCE {
    mschShedulingInfo                   MBMS-MSCHSchedulingInfo             OPTIONAL,
    rlc-Info                            RLC-Info-r6                         OPTIONAL,
    tctf-Presence                       MBMS-TCTF-Presence                  OPTIONAL
}

MBMS-MSCHSchedulingInfo ::=         CHOICE {
    schedulingPeriod-32-Offset          INTEGER (0..31),
    schedulingPeriod-64-Offset          INTEGER (0..63),
    schedulingPeriod-128-Offset         INTEGER (0..127),
    schedulingPeriod-256-Offset         INTEGER (0..255),
    schedulingPeriod-512-Offset         INTEGER (0..511),
    schedulingPeriod-1024-Offset        INTEGER (0..1023)
}

MBMS-NeighbouringCellSCCPCH-r6 ::=  SEQUENCE {
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    rakeCombinableGroupId               MBMS-RakeCombinableGroupId          OPTIONAL,
    layer1Combining                     CHOICE {
        fdd                                 SEQUENCE {
            typeOfL1Combining                   MBMS-TypeOfL1Combining,
            mbms-L1CombiningSchedule            MBMS-L1CombiningSchedule    OPTIONAL
        },
        tdd                                 NULL
    }       OPTIONAL,
    mbms-L23Configuration               MBMS-L23Configuration
}

MBMS-NeighbouringCellSCCPCHList-r6 ::= SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                    MBMS-NeighbouringCellSCCPCH-r6

MBMS-NI-CountPerFrame ::=           ENUMERATED { ni18, ni36, ni72, ni144 }

MBMS-PFLIndex ::=                   INTEGER (1..maxMBMS-Freq)

MBMS-PFLInfo ::=                    FrequencyInfo

MBMS-PhyChInformation-r6 ::=        SEQUENCE {
    mbms-CommonPhyChIdentity            MBMS-CommonPhyChIdentity,
    secondaryCCPCHInfo-MBMS             SecondaryCCPCHInfo-MBMS-r6
}

MBMS-PhyChInformationList-r6 ::=    SEQUENCE (SIZE (1..maxMBMS-CommonPhyCh)) OF
                                    MBMS-PhyChInformation-r6

MBMS-PL-ServiceRestrictInfo-r6 ::=  ENUMERATED { true }

MBMS-PreferredFreqRequest-r6 ::=    SEQUENCE {
    preferredFreqRequest                FrequencyInfo
}

MBMS-PreferredFrequencyInfo-r6 ::=  SEQUENCE {
    mbmsPreferredFrequency              INTEGER (1..maxMBMS-Freq),
    layerConvergenceInformation         CHOICE {
        mbms-Qoffset                        INTEGER (0..7),
        mbms-HCSoffset                      INTEGER (0..7)
    }
}

MBMS-PreferredFrequencyList-r6 ::=  SEQUENCE (SIZE (1..maxMBMS-Freq)) OF
                                    MBMS-PreferredFrequencyInfo-r6

MBMS-PTM-RBInformation-C ::=        SEQUENCE {
    rbInformation                       MBMS-CommonRBIdentity,
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity
}

MBMS-PTM-RBInformation-CList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                    MBMS-PTM-RBInformation-C

MBMS-PTM-RBInformation-N ::=        SEQUENCE {
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity,
    layer1-CombiningStatus              ENUMERATED { true }                 OPTIONAL
}
```

```
MBMS-PTM-RBInformation-NList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                        MBMS-PTM-RBInformation-N

MBMS-PTM-RBInformation-S ::=        SEQUENCE {
    rbInformation                       MBMS-CommonRBIdentity,
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity
}

MBMS-PTM-RBInformation-SList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                        MBMS-PTM-RBInformation-S

MBMS-RakeCombinableGroupId ::=      INTEGER (0..15)


MBMS-RequiredUEAction-Mod ::=       ENUMERATED {
                                        none,
                                        acquireCountingInfo,
                                        acquirePTM-RBInfo,
                                        establishPMMConnectionrequestPTPRB,
                                        releasePTM-RB }

MBMS-RequiredUEAction-UMod ::=      ENUMERATED {
                                        none,
                                        acquirePTM-RBInfo,
                                        establishPMMConnectionrequestPTPRB }

MBMS-SCCPCHIdentity ::=             INTEGER (1..maxSCCPCH)

MBMS-ServiceAccessInfo-r6 ::=       SEQUENCE {
    shortTransmissionID                 MBMS-ShortTransmissionID,
    accessprobabilityFactor-Idle        MBMS-AccessProbabilityFactor,
    accessprobabilityFactor-UraPCH      MBMS-AccessProbabilityFactor        OPTIONAL
}

MBMS-ServiceAccessInfoList-r6 ::=   SEQUENCE (SIZE (1..maxMBMSservCount)) OF
                                        MBMS-ServiceAccessInfo-r6

MBMS-ServiceIdentity ::=            SEQUENCE {
    serviceIdentity                     OCTET STRING (SIZE (3)),
    plmn-Identity                       CHOICE {
        -- The 'sameAsMIB-PLMN-Id' choice refers to the 'PLMN Identity' (R99) in MIB.
        sameAsMIB-PLMN-Id                   NULL,
        other                               CHOICE {
            -- The 'sameAsMIB-MultiPLMN-Id' choice refers to one of the (1..5) PLMN Identities
            -- provided in the 'Multiple PLMN List' (REL-6) in MIB.
            sameAsMIB-MultiPLMN-Id              INTEGER (1..5),
            explicitPLMN-Id                     PLMN-Identity
        }
    }
}

MBMS-ServiceSchedulingInfo-r6 ::=   SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-ServiceTransmInfoList          MBMS-ServiceTransmInfoList          OPTIONAL,
    nextSchedulingperiod                INTEGER (0..31)
}

MBMS-ServiceSchedulingInfoList-r6 ::= SEQUENCE (SIZE (1..maxMBMSservSched)) OF
                                        MBMS-ServiceSchedulingInfo-r6

MBMS-ServiceTransmInfo ::=          SEQUENCE {
    -- Actual values (start, duration) = IE values * 4
    start                               INTEGER (0..255),
    duration                            INTEGER (1..256)
}

MBMS-ServiceTransmInfoList ::=      SEQUENCE (SIZE (1..maxMBMSTransmis)) OF
                                        MBMS-ServiceTransmInfo

MBMS-SessionIdentity ::=            OCTET STRING (SIZE (1))

MBMS-ShortTransmissionID ::=        INTEGER (1..32)

MBMS-SIBType5-SCCPCH-r6 ::=         SEQUENCE {
    sccpchIdentity                      MBMS-SCCPCHIdentity,
```

```
    transpCHInformation                 MBMS-TrCHInformation-SIB5List
}

MBMS-SIBType5-SCCPCHList-r6 ::=     SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        MBMS-SIBType5-SCCPCH-r6

MBMS-TCTF-Presence ::=              ENUMERATED { false }

MBMS-TimersAndCouneters-r6 ::=      SEQUENCE {
    t-318                               T-318                               DEFAULT ms1000
}

MBMS-TransmissionIdentity ::=       SEQUENCE {
    mbms-ServiceIdentity                MBMS-ServiceIdentity,
    mbms-SessionIdentity                MBMS-SessionIdentity                OPTIONAL
}

MBMS-TranspChInfoForCCTrCh-r6 ::=   SEQUENCE {
    commonCCTrChIdentity                MBMS-CommonCCTrChIdentity,
    transportFormatCombinationSet       TFCS
}

MBMS-TranspChInfoForEachCCTrCh-r6 ::= SEQUENCE (SIZE (1..maxMBMS-CommonCCTrCh)) OF
                                        MBMS-TranspChInfoForCCTrCh-r6

MBMS-TranspChInfoForEachTrCh-r6 ::= SEQUENCE (SIZE (1..maxMBMS-CommonTrCh)) OF
                                        MBMS-TranspChInfoForTrCh-r6

MBMS-TranspChInfoForTrCh-r6 ::=     SEQUENCE {
    commonTrChIdentity                  MBMS-CommonTrChIdentity,
    transportFormatSet                  TransportFormatSet
}

MBMS-TrCHInformation-Comm ::=       SEQUENCE {
    transpCh-Info                       MBMS-CommonTrChIdentity,
    rbInformation                       MBMS-PTM-RBInformation-CList        OPTIONAL,
    mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6       OPTIONAL
}

MBMS-TrCHInformation-CommList ::=   SEQUENCE (SIZE (1..maxTrChperSCCPCH)) OF
                                        MBMS-TrCHInformation-Comm

MBMS-TrCHInformation-Neighb ::=     SEQUENCE {
    transpCh-Info                       MBMS-CommonTrChIdentity,
    transpCh-CombiningStatus            BOOLEAN,
    rbInformation                       MBMS-PTM-RBInformation-NList        OPTIONAL,
    mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6       OPTIONAL
}

MBMS-TrCHInformation-NeighbList ::= SEQUENCE (SIZE (1..maxFACHPCH)) OF
                                        MBMS-TrCHInformation-Neighb

MBMS-TrCHInformation-SIB5 ::=       SEQUENCE {
    transpCh-Identity                   INTEGER (1..maxFACHPCH),
    rbInformation                       MBMS-PTM-RBInformation-SList        OPTIONAL,
    mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6       OPTIONAL
}

MBMS-TrCHInformation-SIB5List ::=   SEQUENCE (SIZE (1..maxTrChperSCCPCH)) OF
                                        MBMS-TrCHInformation-SIB5

MBMS-TypeOfL1Combining ::=          CHOICE {
    rake                                NULL,
    soft                                MBMS-L1CombiningTransmTimeDiff
}
MBMS-UnmodifiedService-r6 ::=       SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-RequiredUEAction               MBMS-RequiredUEAction-UMod,
    mbms-PreferredFrequency             MBMS-PFLIndex                       OPTIONAL
}

MBMS-UnmodifiedServiceList-r6 ::=   SEQUENCE (SIZE (1..maxMBMSservUnmodif)) OF
                                        MBMS-UnmodifiedService-r6
```

3GPP TSG- RAN Working Group 2 Meeting #47 **Tdoc ⌘R2-051570**
Athens, Greece, Mai 9th to 13th, 2005

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2601** ⌘**rev** **1** ⌘ Current version: **6.5.0** ⌘

*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:	⌘	Validity of PtM configurations
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	29/04/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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:	⌘	The specification is not clear on when the UE is allowed to use the configuration of a PtM bearer. It is not possible to indicate a change in all active services.
Summary of change:	⌘	Clarification that for services that are listed as “MBMS Unmodified services Information” the PtM bearer broadcast shall be applied by the UE immediately. Clarification that the configurations for services in the MBMS Modified services Information message should be applied only in the next modification period. Addition of an optional activation time in the MBMS Modified services Information message. The activation time is applied for services that are listed as modified services. An additional indication to indicate all active services as modified service is added.
Consequences if not approved:	⌘	Reconfigurations and session starts that imply changes to the physical layer will include a waste of resources and / or unnecessary outage

Clauses affected:	⌘	8.6.9.9, 8.6.9.11, 8.7, 8.7.1.1, 8.7.1.4, 8.7.2.2, 8.7.2.4, 8.7.3.4, 8.7.5.3, 8.7.5.4, 8.7.6.2, 10.2.16j, 10.2.16m, 10.3.9a.17, 11.3

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.6.9.9 MBMS Transmission identity

If the IE "MBMS transmission identity" is included the UE shall:

1> if upper layers indicate that the MBMS transmission has already been received correctly:

2> ignore the information about this MBMS transmission i.e. continue as if the information about the concerned MBMS transmission was not included in the message.

1> otherwise:

2> act upon the information about the concerned MBMS transmission as specified elsewhere.

Next modified section

8.6.9.11 MBMS p-t-m activation time

The UE shall:

1> for the services as listed in the IE “MBMS transmission identity" included in the MBMS MODIFIED SERVICES INFORMATION message for which the IE “MBMS required UE action” is set to “Acquire PTM RB info”;

1> if the IE ”MBMS all unmodified p-t-m services” is included in the MBMS MODIFIED SERVICES INFORMATION message, for the services as listed in the IE "MBMS transmission identity" included in the MBMS UNMODIFIED SERVICES INFORMATION message for which the IE “MBMS required UE action” in the MBMS UNMODIFIED SERVICES INFORMATION message is set to “Acquire PTM RB info”:

2> if the IE “MBMS p-t-m activation time” is not included:

3> if available continue using the currently used p-t-m configuration for this service until the end of the modification period;

3> start to use the p-t-m configuration received in this modification period from the next modification period onward.

2> else:

3> for the cell current cell:

4> stop using any old configuration on TTIs that are after or contain the time instant as indicated by the IE “MBMS p-t-m activation time”.

4> start using the configuration for the S-CCPCH received for that p-t-m bearer in the same modification period as the IE “MBMS p-t-m activation time” on TTIs that are after or that contain the time instant as indicated by the IE “MBMS p-t-m activation time”.

3> for neighbouring cells:

4> for the neighbouring cells for which the IE "MBMS transmission time difference" is included:

5> stop using any old configuration on TTIs corresponding to the TTIs of the cell wherein the UE is reading the MCCH from and where the new p-t-m radio bearer information is valid according to the above;

5> start using the configuration for the S-CCPCH received for that p-t-m bearer in the same modification period as the IE “MBMS p-t-m activation time” on TTIs corresponding to the TTIs of the cell wherein the UE is reading the MCCH from and where the new p-t-m radio bearer information is valid according to the above;

4> for the neighbouring cells for which the IE "MBMS transmission time difference" is not included:

5> stop using any old configuration on TTIs that are after or contain the time instant as indicated by the IE “MBMS p-t-m activation time”.

5> start using the configuration for the S-CCPCH received for that p-t-m bearer in the same modification period as the IE “MBMS p-t-m activation time” on TTIs that are after the time instant as indicated by the IE “MBMS p-t-m activation time”.

Next modified section

8.7 MBMS specific procedures

8.7.1 Reception of MBMS control information

8.7.1.1 General

The procedure for receiving MBMS control information is used by a UE to receive information from UTRAN concerning the way it provides MBMS services the UE has joined. The procedure applies to all UEs supporting MBMS, irrespective of its state (idle, URA_PCH, CELL_PCH, CELL_FACH and CELL_DCH).

Most MBMS control information is provided on the MCCH. The information on MCCH is transmitted using a fixed schedule, which is common for all services. MCCH information other than MBMS ACCESS INFORMATION message is transmitted periodically based on a repetition period. This MCCH information is repeated a configurable number of times with exactly the same content; the period in which the content of MCCH information other than MBMS ACCESS INFORMATION message remains unchanged is called the modification period. MBMS ACCESS INFORMATION message may be transmitted more frequently, based on the Access Info period. The transmissions of MBMS ACCESS INFORMATION message within a modification period need not have exactly the same content (the value of some parameters eg. IE 'Access probability factor – Idle' may change). Nevertheless, the transmissions of MBMS ACCESS INFORMATION message within a modification period should concern the same MBMS service(s), although information for a service may be removed eg. upon completion of the counting for that service.

The general principles are illustrated in figure 8.7.1-1, in which different colours indicate potentially different content of the MCCH information.

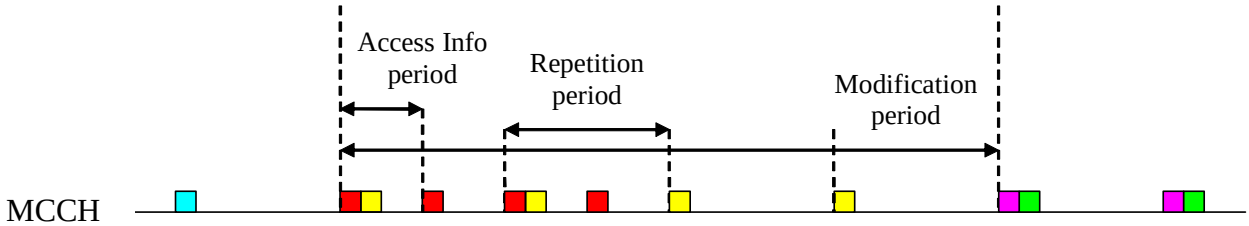

Figure 8.7.1-1: Scheduling of MCCH Information

For services provided via a p-t-m radio bearer scheduling information may be provided on an MSCH mapped on the same S-CCPCH as the p-t-m radio bearer(s). For some of the services provided p-t-m this scheduling information may be provided by signalling an MBMS SCHEDULING INFORMATION message at every scheduling period, while for others the MBMS SCHEDULING INFORMATION message may be signalled less frequently i.e. after a multiple of the scheduling period. In general, the UE is neither required to acquire MSCH information nor to act on it.

In case the UE shall acquire MCCH information that is scheduled at the same time as MSCH information, the reception of the MCCH information shall take precedence.

In order to minimise the time the UE needs to read MCCH to acquire the required information, UTRAN should schedule the MCCH messages in a specific order ie. messages which content has changed compared to the previous modification period should be scheduled prior to messages which contents has not changed. More specifically, the UE may assume that UTRAN schedules the MCCH messages in the following order:

MBMS MODIFIED SERVICES INFORMATION,

followed by messages which content changed - in the following order: MBMS GENERAL INFORMATION, MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION, one or more MBMS NEIGHBOURING CELL P-T-M RB INFORMATION,

followed by messages which content did not change - in the following order: MBMS UNMODIFIED SERVICES INFORMATION, MBMS GENERAL INFORMATION, MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION, one or more MBMS NEIGHBOURING CELL P-T-M RB INFORMATION

8.7.1.2 Initiation

The requirements concerning which MBMS control information the UE shall acquire in the different cases is specified in other subclauses. This section specifies common requirements concerning the reception of MCCH information and MSCH information.

8.7.1.3 UE requirements on reading of MCCH information

When requested to acquire MBMS control information other than the MBMS ACCESS INFORMATION message , the UE shall:

1> if requested to start reading MCCH at the next modification period:

2> start reading MCCH at the beginning of the next modification period.

1> otherwise

2> start reading MCCH at the beginning of the next repetition period.

1> if requested to stop reading MCCH at the end of the modification period:

2> continue reading MCCH until the required MBMS control information is received or until the UE detects a TTI in which no MCCH information is transmitted, whichever is first;

2> continue reading MCCH in this manner at every subsequent repetition period, until the information is received correctly or until the end of the modification period.

1> otherwise:

2> continue reading MCCH until the required MBMS control information is received or until the UE detects a TTI in which no MCCH information is transmitted, whichever is first;

2> continue reading MCCH in this manner at every subsequent repetition period, until the information is received correctly.

NOTE 1: The UE may combine information received at different repetition periods within a modification period.

When requested to acquire the MBMS ACCESS INFORMATION message, the UE shall:

1> if requested to start reading MCCH at the next modification period:

2> start reading MCCH at the beginning of the next modification period.

1> otherwise:

2> start reading MCCH at the beginning of the next access info period.

1> continue reading MCCH in this manner at every subsequent access info period, until the message is received correctly or until the end of the modification period.

If the UE is CELL_DCH and has a compressed mode pattern that overlaps with the period in which it needs to read MCCH, the UE may temporarily refrain from receiving MCCH unless it is capable of simultaneous operation. If the UE is CELL_FACH and has a measurement occasion that overlaps with the period in which it needs to read MCCH, the UE may temporarily refrain from receiving MCCH unless it is capable of simultaneous operation. Likewise, in Idle mode as well as in CELL_PCH and URA_PCH states the UE may temporarily refrain from receiving MCCH if needed to fulfill the measurements performance requirements as specified in [4].

NOTE 2: The UTRAN should ensure that for each UE in CELL_FACH the assigned measurement occasions do not overlap constantly with the periodic MCCH transmissions.

8.7.1.4 UE requirements on reading of MSCH information

If the UE supports reception of MSCH, UE shall:

1> if the UE needs to acquire MCCH information that is transmitted at the same time as the MSCH information and the UE does not support simultaneous reception:

2> refrain from reading MSCH.

If the UE supports reception of MSCH, UE should:

1> start reading MSCH at the beginning of the next scheduling period;

1> continue reading MSCH until the required MBMS control information is received or until the UE detects a TTI in which no MSCH information is transmitted, whichever is first.

Next modified section

8.7.2 MCCH acquisition

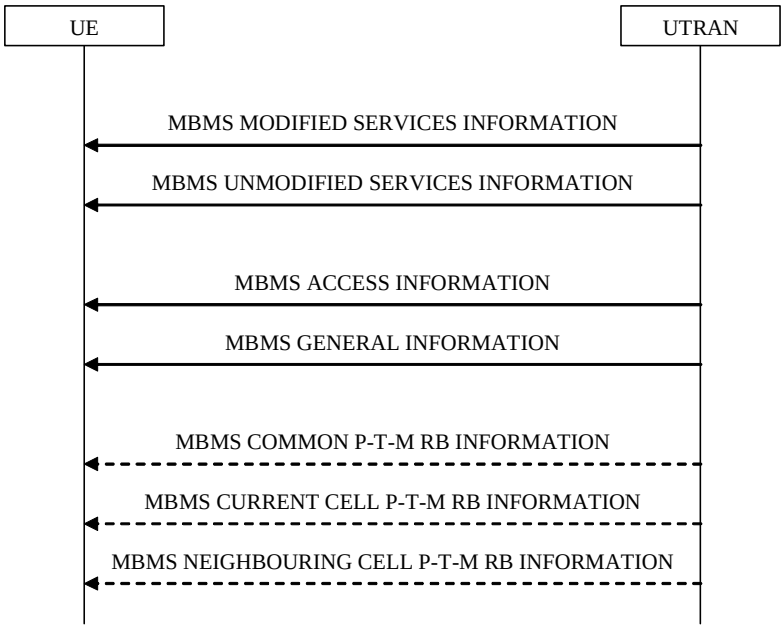

Figure 8.7.2-1: MCCH acquisition, normal

8.7.2.1 General

The UE applies the MCCH acquisition procedure to determine the MBMS services available in the cell and to initiate reception of the services that the UE has joined. The procedure applies to all UEs supporting MBMS, irrespective of their state (idle, URA_PCH, CELL_PCH, CELL_FACH and CELL_DCH).

8.7.2.2 Initiation

The UE shall apply the MCCH acquisition procedure upon selecting (eg. upon power on) or re- selecting a cell supporting MBMS, upon change of MBMS controlling cell (eg. due to an active set update or hard handover), upon entering UTRA from another RAT, upon release of a MBMS PTP RB for the purpose of changing transfer mode, upon return from loss of coverage and upon receiving an indication from upper layers that the set of activated services has changed.

8.7.2.3 MCCH information to be acquired by the UE

The UE shall detect the available MBMS services by acquiring the MBMS MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION messages without delaying reading of MCCH until the

next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3.

The UE shall immediately acquire the MBMS ACCESS INFORMATION and the MBMS GENERAL INFORMATION messages ie. it shall not delay reception of these messages until it has completed the acquisition of the MBMS MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION messages. Likewise, the UE should immediately acquire the MBMS CURRENT CELL P-T-M RB INFORMATION and MBMS NEIGHBOURING CELL P-T-M RB INFORMATION messages.

The UE shall continue acquiring the above messages until it has received a consistent set of MCCH information eg. both the MBMS MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION message should be acquired in the same modification period.

8.7.2.4 Reception of the MBMS MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION by the UE

Upon completing the reception of the MBMS MODIFIED SERVICES INFORMATION and the MBMS UNMODIFIED SERVICES INFORMATION messages, the UE shall

1> act as follows for each of the services included in these messages provided that the service is included in variable MBMS_ACTIVATED_SERVICES and upper layers indicate that the session has not yet been received correctly (referred to as 'applicable services');

1> act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following;

1> if more than one preferred frequency applies for the applicable services:

2> delay acting upon the "MBMS Preferred frequency information" until after completing the MCCH acquisition;

2> act upon the "MBMS Preferred frequency information" as specified in subclause 8.6.9.2 for the service(s) that upper layers indicate to have highest priority.

1> perform the service prioritisation procedure as specified in subclause 8.5.26;

1> if the UE receives an MBMS service using a p-t-m radio bearer and the received messages do~~es~~ not contain an IE "MBMS required action" set to "Acquire PTM RB info" for that service then the UE shall:

2> stop receiving the concerned MBMS service and clear all service specific information applicable for the concerned service.

Next modified section

8.7.3.4 UE action upon receiving MBMS MODIFIED SERVICES INFORMATION message

Upon receiving the MBMS MODIFIED SERVICES INFORMATION message, the UE shall act as follows for each of the services included in this messages provided that the service is included in variable MBMS_ACTIVATED_SERVICES and upper layers indicate that the session has not yet been received correctly (referred to as 'applicable services'):

1> if the IE “MBMS all unmodified p-t-m services” is included in the MBMS MODIFIED SERVICES INFORMATION messages:

2> for all services listed in the message UNMODIFIED SERVICES INFORMATION, provided that the service is included in variable MBMS_ACTIVATED_SERVICES, upper layers indicate that the session has not yet been received correctly (referred to as 'applicable services') and the IE “MBMS required UE action” in the message MBMS UNMODIFIED SERVICES INFORMATION is set to “Acquire PTM RB info”:

3> continue acquiring the MBMS UNMODIFIED SERVICES INFORMATION, MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION, and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION messages without delaying reading of MCCH

until the next modification period and without stopping at the end of the modification period, in accordance with subclause 8.7.1.3

3> act upon the MBMS UNMODIFIED SERVICES INFORMATION MBMS COMMON P-T-M RB INFORMATION, MBMS CURRENT CELL P-T-M RB INFORMATION and the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION message, if received, in accordance with subclause 8.7.5;

2> if the UE receives an MBMS service using a p-t-m radio bearer and the messages MBMS Unmodified services Information and MBMS MODIFIED SERVICES INFORMATION do not contain an IE "MBMS required action" set to "Acquire PTM RB info" for that service then the UE shall:

3> stop receiving the concerned MBMS service and clear all service specific information applicable for the concerned service.

1> act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following

1> if one or more preferred frequency applies for the applicable services:

2> delay acting upon the "MBMS Preferred frequency information" until after completing the MCCH acquisition;

2> act upon the "MBMS Preferred frequency information" as specified in 8.6.9.2 for the service(s) that upper layers indicate to have highest priority.

1> perform the service prioritisation procedure as specified in subclause 8.5.26;

1> if applicable, use a single MBMS MODIFICATION REQUEST to request release of radio bearers corresponding with lower priority MBMS services provided p-t-p and/or to request a move to the preferred frequency as specified in subclause 8.5.26 and subclause 8.6.9.2 respectively;

1> the procedure ends.

Next modified section

8.7.5.3 Reception of the MBMS Current Cell PTM RB information

Upon completing the reception of the MBMS COMMON P-T-M RB INFORMATION and the MBMS CURRENT CELL P-T-M RB INFORMATION messages for an MBMS service it has joined, the UE shall:

1> if the UE is already receiving an MTCH and does not have the capability to receive the new service in addition:

2> the UE behaviour is undefined.

NOTE: In this case, the UE may request upper layers to prioritise the services and only receive the service(s) prioritised by upper layers.

1> act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following;

1> if the UE previously received the service by means of p-t-p radio bearers or;

1> if the UE previously received the service by means of a p-t-m radio bearer from a cell belonging to another MBMS cell group:

2> re- establish RLC;

2> re- initialise PDCP (FFS).

1> start immediately to use the indicated configuration unless specified otherwise;

1> start or continue receiving the indicated p-t-m radio bearers depending on its UE capabilities.

The UE shall continue acquiring the above messages until it has received a consistent set of MCCH information ie. ~~both~~ the MBMS MODIFIED SERVICES INFORMATION message, MBMS UNMODIFIED SERVICES INFORMATION

message MBMS COMMON P-T-M RB INFORMATION and the MBMS CURRENT CELL P-T-M RB INFORMATION message should be acquired in the same modification period.

8.7.5.4 Reception of the MBMS Neighbouring Cell PTM RB information

Upon receiving the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION message for an MBMS service it has joined, the UE shall

1> start immediately to use the indicated neighbouring cells and configuration, or a subset of them, for L1- or L2 combining unless specified otherwise;

1> start or continue receiving the indicated p-t-m radio bearers from the selected neighbouring cells depending on its UE capabilities~~, TBS~~.

The UE shall apply MBMS NEIGHBOURING CELL P-T-M RB INFORMATION only in combination with an MBMS MODIFIED SERVICES INFORMATION message, MBMS UNMODIFIED SERVICES INFORMATION message MBMS COMMON P-T-M RB INFORMATION and MBMS CURRENT CELL P-T-M RB INFORMATION message acquired in the same modification period.

Next modified section

8.7.6 MBMS modification request

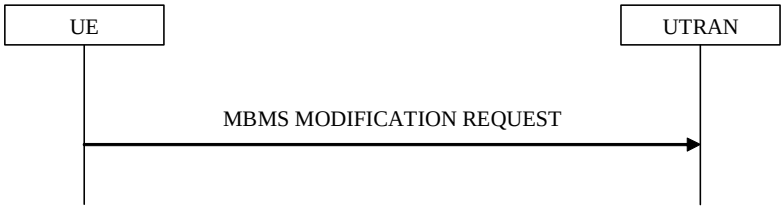

Figure 8.7.6-1: MBMS modification request, normal

8.7.6.1 General

The MBMS modification request procedure is used by the UE to request UTRAN to release the p-t-p radio bearers ofone or more MBMS services the UE is receiving. The procedure may also be used to request to be moved to a preferred frequency applicable for one or more (prioritised) MBMS services, the UE has joined. The procedure applies to all UEs supporting MBMS, that are in state CELL_DCH.

8.7.6.2 Initiation

The UE shall initiate the MBMS modification request procedure in the following cases:

1> the preferred frequency applicable for the highest priority MBMS service is different from the currently used frequency;

1> upper layers request to discontinue reception of an MBMS service provided via a p-t-p radio bearer e.g. because this inhibits reception of a higher priority service.

NOTE: The above case may ~~occor~~ occur upon receiving a dedicated notification or in other cases eg. a change of transfer mode from p-t-p to p-t-m for the UE's highest priority MBMS service.

The UE shall set the contents of the MBMS MODIFICATION REQUEST message as follows:

1> if the preferred frequency applicable for the highest priority MBMS service is different from the currently used frequency:

2> include the IE "MBMS preferred frequency request" and set it to the applicable preferred frequency;

1> if upper layers request to discontinue reception of an MBMS service provided via a p-t-p radio bearer:

2> include the p-t-p radio bearers used for the corresponding MBMS services within the IE "MBMS RB list requested to be released".

8.7.6.3 Reception of a MBMS MODIFICATION REQUEST message by the UTRAN

Upon reception of a MBMS MODIFICATION REQUEST message, the UTRAN may take further action depending on the contents of the received message.

The procedure ends.

Next modified section

10.2.16j MBMS MODIFIED SERVICES INFORMATION

This information is transmitted periodically by UTRAN to inform UEs about a change applicable for one or more MBMS services available in the current cell and possibly in neighbouring cells.

Logical channel: MCCH, DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Modified service list	OP	1.. <maxMBMSservModif>			REL-6
>MBMS Transmission identity	MP		MBMS Transmission identity 10.3.9a.12		REL-6
>MBMS required UE action	MP		Enumerated (None, Acquire counting info, Acquire PTM RB info, Establish PMM connection, Release PTM RB)	Indicates required UE action upon receiving the message. When sent on the DCCH, only the following values apply: None (FLC), Acquire PTM RB info, Establish PMM connection).	REL-6
>MBMS preferred frequency	OP			Indicates the frequency that UEs shall consider as the preferred frequency layer for cell re-selection during a session for an MBMS service the UE has joined, as specified in [25.304] .	REL-6
>>PFL index	CV-*MCCH*		Integer (1.. <maxMBMS-Freq>)	Index pointing to an entry in the list included in MBMS GENERAL INFORMATION.	REL-6
>>PFL info	CV-*DCCH*		Frequency info 10.3.6.36		REL-6
>Continue MCCH reading	MP		BOOLEAN	MCCH in- band notification. Indicates whether or not the UE should continue reading MCCH in the next modification period. Not applicable when sent on the DCCH	REL-6
MBMS re- acquire MCCH	MP		BOOLEAN		REL-6
End of modified MCCH information	OP		Integer (1..15)	Final TTI including MCCH messages with different content than in the previous modification period	REL-6
MBMS all unmodified p-t-m services	CV-*MCCHOP*		Enumerated(True)	True means that the UE should re-acquire the PtM information for all services listed in the message MBMS UNMODIFIED SERVICES INFORMATION with the IE "MBMS required UE action" set to "Acquire PTM RB info"	
MBMS p-t-m activation time	CV-*MCCHOP*		MBMS p-t-m activation time 10.3.9a.17		REL-6

Condition	Explanation
MCCH	This IE is mandatory present if the message is sent via MCCH and not needed otherwise.
DCCH	This IE is mandatory present if the message is sent via DCCH and not needed otherwise.
MCCHOP	This IE is optionally present if the message is sent via MCCH and not needed otherwise.

Next modified section

10.2.16m MBMS UNMODIFIED SERVICES INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the MBMS services, available in the current cell and possibly in neighbouring cells, that have not changed if the IE "MBMS all unmodified p-t-m services" is not included in the MBMS MODIFIED SERVICES INFORMATION message in this modification period. The message is repeated every repetition period while its contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message type	MP		Message Type	
Unmodified services list	OP	1 to <maxMBMSservUnmodif>		If the IE "MBMS all unmodified p-t-m services" is included in the MBMS MODIFIED SERVICES INFORMATION message in this modification period, the services with the IE "MBMS required UE action" set to "Acquire PTM RB info" in the message MBMS UNMODIFIED SERVICES INFORMATION should be considered as modified.
>MBMS Transmission identity	MP		MBMS Transmission identity 10.3.9a.12	
>MBMS required UE action	MP		Enumerated (None, Acquire PTM RB info, Establish PMM connection)	Indication of the UE action required to receive the service:
>MBMS preferred frequency	OP		Integer (1..<maxMBMS-Freq>)	Information about the frequency that UEs shall consider as the preferred frequency layer for cell re-selection during a session for an MBMS service the UE has joined, as specified in [25.304] . Index pointing to an entry in the list included in MBMS GENERAL INFORMATION

Next modified section

10.3.9a.17 MBMS p-t-m activation time

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
MBMS p-t-m activation time	MP		Integer (0..2047)	The 11 LSB of the SFN. Note 1 and 2.	REL-6
Note 1: The "MBMS p-t-m activation time" indicates the start of the 10 ms frame corresponding to the indicated SFN value and of the primary CCPCH of the cell where this IE is transmitted.					
Note 2: The range of the "MBMS p-t-m activation time" is from 10 ms after the beginning of the MCCH modification period wherein it is transmitted and to the end of next following MCCH modification period. The UE shall consider a value out of this range as expired.					

Next modified section

11.3 Information element definitions

```
MBMS-ModifedService-r6 ::=          SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-RequiredUEAction               MBMS-RequiredUEAction-Mod,
    mbms-PreferredFrequency             CHOICE {
        mcch                                MBMS-PFLIndex,
        dcch                                MBMS-PFLInfo
    }       OPTIONAL,
    continueMCCHReading                 BOOLEAN
}

MBMS-ModifedServiceList-r6 ::=      SEQUENCE (SIZE (1..maxMBMSservModif)) OF

MBMS-PtMActivationTime  ::= Integer(0..2047)

-- **************************************************
--
-- MBMS MODIFIED SERVICES INFORMATION
--
-- **************************************************

MBMSModifiedServicesInformation ::= SEQUENCE {
    -- MBMS Modified Services Information IEs
        modifedServiceList              MBMS-ModifedServiceList-r6          OPTIONAL,
        mbms-ReacquireMCCH              BOOLEAN,
        endOfModifiedMCCHInformation    INTEGER (1..15)                     OPTIONAL,
        mbms-AllUnmodifiedPTMServices   ENUMERATED(TRUE)                    OPTIONAL,
        mbms-PtMActivationTime          MBMS-PtMActivationTime              OPTIONAL,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}
```

3GPP TSG-RAN2 Meeting #47
Athens, Greece, 9th-13th May, 2005

Tdoc ⌘R2-051698

CR-Form-v7.1

CHANGE REQUEST

⌘ **25.331** **CR** 2609 ⌘**rev** **2** ⌘ Current version: **6.5.0** ⌘

*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:	⌘	Introduction of an S-CCPCH power offset difference in order to improve cell selection for soft and selective combining
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	13/05/2005
Category:	⌘	**C**
Release:	⌘	Rel-6

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:
Ph2 (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)
Rel-7 (Release 7)

Reason for change:	⌘	In MBMS, the selection of neighbouring cells for the combining process (soft or selective combining) currently relies on the measured received P-CPICH powers (P-CCPCH power for TDD). This may be suboptimum in case a neighbouring cell has a reduced S-CCPCH power. For instance, this can occur in case of a congestion situation in a neighbouring cell and the operator prefers to reduce the power dedicated to MBMS and allocate it to other services, while keeping the same P-CPICH power. In this case the UE should be given the possibility to replace this neighbouring cell having a weaker S-CCPCH with another cell having a stronger S-CCPCH as this would improve the combining gain.
Summary of change:	⌘	A new IE "Secondary CCPCH Power Offset Difference" is added in the MBMS NEIGHBOURING CELL P-T-M RB INFORMATION. This new IE gives the UE an indication of the S-CCPCH powers on the neighbouring cells that completes the neighbouring cell ranking based on P-CPICH power (P-CCPCH power for TDD). Few editorial corrections are also made.
Consequences if not approved:	⌘	UE may choose to combine cells that do not offer the best S-CCPCH power. This leads to reduced combining performance.

Clauses affected:	⌘	10.2.16k, 11.3

[Y] [N]

Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

10.2.16k MBMS NEIGHBOURING CELL P-T-M RB INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the p-t-m RB configuration used to in neighbouring cells, indicating the UE may perform selection and/ or soft combining. The message contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Neighbouring cell identity	MP		Integer (1..X)	Assumption is to use a short index e.g. pointer to SIB 11/ 12	REL-6
Neighbouring cell's S-CCPCH list	MP	1 to <maxSCCPCH>			REL-6
>Secondary CCPCH info	MP		MBMS Common PhyCh identity 10.3.9a.2	S-CCPCH configuration used in neighbouring cell. Refers to a configuration in the common RB info	REL-6
>Secondary CCPCH Power Offset Difference	MD		Integer (-6, -3, 3, 6)	Difference (Pn – Of) between the S-CCPCH power offset (Pn) of the neighboring cell S-CCPCH and an arbitrary offset (Of). An arbitary offset(Of) is specific to the current cell and the same for all its neighbouring cells, in dB. Default value is 0. Note 3 and 4.	REL-6
>Rake combinable group id	OP		Integer (0..15)	The IE should only be used in case of FDD. Indicates a group of cells for which Rake combining may be performed	REL-6
>>L1 combining	OP			L2- combining applies if the IE is absent	REL-6
>>CHOICE *mode*	MP				REL-6
>>>FDD					REL-6
>>>>Type of L1-combining	MP		Enumerated (Rake, Soft)	In case the IE is set to 'Rake', the current and the neighbouring cell are in the same S-CCPCH cluster, as defined in [29]. Each combining method has different transmission time difference requirements, as specified in [19, 20]	REL-6
>>>>MBMS transmission time difference	CV- Soft		Integer (0..3)	Indicates the time difference between the TTIs on the current and the neighbouring cell's SCCPCH that can be L1-combined	REL-6
>>>>MBMS L1 combining schedule	OP		MBMS L1 combining schedule 10.3.9a.7	If included partial layer 1 (Soft) combining applies, in which case this IE indicates when L1-combining applies. If the IE is absent, L1 combining applies continuously	REL-6
>>>TDD				(no data)	REL-6
>CHOICE L23 configuration	MP				REL-6
>>SameAs Current cell				Apart from the physical channel configuration and the MSCH configuration information, the same configuration as for the indicated S-CCPCH used in the current cell applies	REL-6
>>>Current cell's S-CCPCH	MP		MBMS Current cell S-CCPCH identity 10.3.9a.5	Reference to the S-CCPCH in the current cell with which applies exaclty the same configuration	REL-6
>>>MSCH configuration information	MP		MSCH configuration		REL-6

Information Element/Group name	Need	Multi	Type and reference		Version
			information 10.3.9a.16		
>>Different					REL-6
>>>TrCh information for common for all TrCh	MP		MBMS Common CCTrCh identity 10.3.9a.1	Refers to a (TFCS) configuration in the common RB info	REL-6
>>>TrCH information	MP	1 to <maxFACHPCH>			REL-6
>>>>TrCh information	MP		MBMS Common TrCh identity 10.3.9a.4	Refers to a (TFS) configuration in the common RB info	REL-6
>>>>TrCh combining status	MP		BOOLEAN	Value TRUE means that TrCh combining is used for this transport channel (TDD only). Note 2.	REL-6
>>>>RB information list	OP	1 to <maxRBperTrCh>		The IE is absent if (temporarily) no RBs corresponding with services provided in the current cell are mapped to this TrCh or if the TrCH only carries MCCH and/ or MSCH	REL-6
>>>>>RB information	MP		MBMS p-t-m RB information 10.3.9a.7a		REL-6
>>>>MSCH configuration information	OP		MSCH configuration information 10.3.9a.16	Included if the TrCH carries MSCH	

NOTE 1: The signalling supports the option that UTRAN maps one service to L1 combining slots for some neighbours and to the L2 combining slots for other neighbours i.e. the use of different combining schemes for different neighbours

NOTE 2: Transport combining can only be indicated when the complete L2 configuration is provided for the neighbouring cell (i.e. using L2 configuration choice “different”). Fortunately, a scenario in which the neighbouring cell configuration is different from the current cell is regarded as the typical scenario for using transport combining.

NOTE 3: For FDD, an S-CCPCH power offset is defined as the offset between one S-CCPCH and the P-CPICH of a given cell (Ps-ccpch – Pp-cpich). For TDD, an S-CCPCH power offset is defined as the offset between one S-CCPCH and the P-CCPCH of a given cell (Ps-ccpch – Pp-ccpch).

NOTE 4: The Secondary CCPCH Power Offset Difference IE gives the UE an indication of the S-CCPCH power on the neighbouring cells that may be used to complete the neighbouring cell ranking based on P-CPICH power for FDD or P-CCPCH for TDD.

Condition	Explanation
Soft	This IE is mandatory present if the IE "Type of L1-combining" is included and set to 'soft' and not needed otherwise.

////////////////////////// NEXT MODIFIED SECTION //////////////////////

11.3 Information element definitions

[..]

```
MBMS-NeighbouringCellSCCPCH-r6 ::=  SEQUENCE {
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    secondaryCCPCHPwrOffsetDiff         MBMS-SCCPCHPwrOffsetDiff            OPTIONAL,
    rakeCombinableGroupId               MBMS-RakeCombinableGroupId          OPTIONAL,
    layer1Combining                     CHOICE {
        fdd                                 SEQUENCE {
            typeOfL1Combining                   MBMS-TypeOfL1Combining,
            mbms-L1CombiningSchedule            MBMS-L1CombiningSchedule    OPTIONAL
        },
        tdd                                 NULL
    }       OPTIONAL,
    mbms-L23Configuration               MBMS-L23Configuration
}

MBMS-SCCPCHPwrOffsetDiff ::=        ENUMERATED { mcpo-minus6, mcpo-minus3, mcpo-plus3, mcpo-plus6 }
```

3GPP TSG-RAN WG2 Meeting #47
Athens, Greece, 9 – 13 May 2005

Tdoc ⌘R2-051559
Revised: R2-051374

CR-Form-v7.1

CHANGE REQUEST

⌘ **25.331** **CR** **2613** ⌘**rev** **-** ⌘ Current version: **6.5.0** ⌘

*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 asn1 issues
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	12/05/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

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:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	A number of open issues on the MBMS asn.1 need to be handled. The indvidual issues a listed in the cover paper (R2-051374).
Summary of change:	⌘	**asn0008:** References to the IE "RLC Info" in the PTM RB information is optimised. A new IE "RLC Info MBMS" is introduced featuring only the DL RLC UMD. **asn0013:** The semantics of the IE "End of modified MCCH information" is clarified in the tabular. The range is extended to 1..16. **asn0023:** The availability of the IE "MBMS session identity" is clarified in the tabular. **asn0026:** The encoding and the semantics of the IE "neigbouring cell identity" is defined.
Consequences if not approved:	⌘	*(Category B)*

Clauses affected:	⌘	10.2.16f, 10.2.16j, 10.2.16k, 10.3.4.8, 10.3.4.23, 10.3.4.23a *(new)*, 10.3.9a.13, 10.3.9a.16, 11.2, 11.3

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

10 Message and information element functional definition and content

10.2 Radio Resource Control messages

10.2.16f MBMS COMMON P-T-M RB INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the p-t-m RB configuration information that may be common between different services, applicable in the current and/ or in neighbouring cells. The message contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
RB information list	MP	1 to <maxMBMS-CommonRB>			REL-6
>RB identity	MP		MBMS Common RB identity 10.3.9a.3		REL-6
>PDCP info	MP		PDCP info 10.3.4.2		REL-6
>RLC info	MP		RLC info MBMS 10.3.4.23a		REL-6
TrCh information for each TrCh	MP	1 to <maxMBMS-CommonTrCh>			REL-6
>Transport channel identity	MP		MBMS Common TrCh identity 10.3.9a.4		REL-6
>TFS	MP		Transport format set 10.3.5.23		REL-6
TrCh information for each CCTrCh	MP	1 to <maxMBMS-CommonCCTrCh>			REL-6
>CCTrCH identity	MP		MBMS Common CCTrCh identity 10.3.9a.1		REL-6
>TFCS	MP		Transport format combination set 10.3.5.20		REL-6
PhyCh information	MP	1 to <maxMBMS-CommonPhyCh>			REL-6
>PhyCh identity	MP		MBMS Common PhyCh identity 10.3.9a.2		REL-6
>Secondary CCPCH info MBMS	MP		Secondary CCPCH info MBMS 10.3.6.71a		REL-6

10.2.16j MBMS MODIFIED SERVICES INFORMATION

This information is transmitted periodically by UTRAN to inform UEs about a change applicable for one or more MBMS services available in the current cell and possibly in neighbouring cells.

Logical channel: MCCH, DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Modified service list	OP	1.. <maxMBMSservModif>			REL-6
>MBMS Transmission identity	MP		MBMS Transmission identity 10.3.9a.12		REL-6
>MBMS required UE action	MP		Enumerated (None, Acquire counting info, Acquire PTM RB info, Establish PMM connection, Release PTM RB)	Indicates required UE action upon receiving the message. When sent on the DCCH, only the following values apply: None (FLC), Acquire PTM RB info, Establish PMM connection).	REL-6
>MBMS preferred frequency	OP			Indicates the frequency that UEs shall consider as the preferred frequency layer for cell re-selection during a session for an MBMS service the UE has joined, as specified in [25.304] .	REL-6
>>PFL index	CV-*MCCH*		Integer (1.. <maxMBMS-Freq>)	Index pointing to an entry in the list included in MBMS GENERAL INFORMATION.	REL-6
>>PFL info	CV-*DCCH*		Frequency info 10.3.6.36		REL-6
>Continue MCCH reading	MP		BOOLEAN	MCCH in- band notification. Indicates whether or not the UE should continue reading MCCH in the next modification period. Not applicable when sent on the DCCH	REL-6
MBMS re- aquire MCCH	MP		BOOLEAN		REL-6
End of modified MCCH information	OP		Integer (1..~~15~~16)	~~Final~~ The number of TTIs at the beginning of each repetition period that may include~~ing~~ MCCH messages with different content than in the previous modification period. If not present: the number of TTIs is unspecified.	REL-6

Condition	Explanation
MCCH	This IE is mandatory present if the message is sent via MCCH and not needed otherwise.
DCCH	This IE is mandatory present if the message is sent via DCCH and not needed otherwise.

10.2.16k MBMS NEIGHBOURING CELL P-T-M RB INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the p-t-m RB configuration used to in neighbouring cells, indicating the UE may perform selection and/ or soft combining. The message contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Neighbouring cell identity	MP		Integer (~~1..X~~0..< maxCellMeas−1>)	Points to IE 'Cell Info' obtained from IE 'Intra-frequency Cell Info list' in SIB 11. ~~Assumption is to use a short index eg. pointer to SIB 11/ 12~~	REL-6
Neighbouring cell's S-CCPCH list	MP	1 to <maxSCCPCH>			REL-6
>Secondary CCPCH info	MP		MBMS Common PhyCh identity 10.3.9a.2	S-CCPCH configuration used in neighbouring cell. Refers to a configuration in the common RB info	REL-6
>Rake combinable group id	OP		Integer (0..15)	The IE should only be used in case of FDD. Indicates a group of cells for which Rake combining may be performed	REL-6
>>L1 combining	OP			L2- combining applies if the IE is absent	REL-6
>>CHOICE *mode*	MP				REL-6
>>>FDD					REL-6
>>>>Type of L1-combining	MP		Enumerated (Rake, Soft)	In case the IE is set to 'Rake', the current and the neighbouring cell are in the same S-CCPCH cluster, as defined in [29]. Each combining method has different transmission time difference requirements, as specified in [19, 20]	REL-6
>>>>MBMS transmission time difference	CV- Soft		Integer (0..3)	Indicates the time difference between the TTIs on the current and the neighbouring cell's SCCPCH that can be L1-combined	REL-6
>>>>MBMS L1 combining schedule	OP		MBMS L1 combining schedule 10.3.9a.7	If included partial layer 1 (Soft) combining applies, in which case this IE indicates when L1-combining applies. If the IE is absent, L1 combining applies continuously	REL-6
>>>TDD				(no data)	REL-6
>CHOICE L23 configuration	MP				REL-6
>>SameAs Current cell				Apart from the physical channel configuration and the MSCH configuration information, the same configuration as for the indicated S-CCPCH used in the current cell applies	REL-6
>>>Current cell's S-CCPCH	MP		MBMS Current cell S-CCPCH identity 10.3.9a.5	Reference to the S-CCPCH in the current cell with which applies exaclty the same configuration	REL-6
>>>MSCH configuration information	MP		MSCH configuration information 10.3.9a.16		REL-6
>>Different					REL-6
>>>TrCh information for	MP		MBMS	Refers to a (TFCS) configuration	REL-6

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
common for all TrCh			Common CCTrCh identity 10.3.9a.1	in the common RB info	
>>>TrCH information	MP	1 to <maxFACHPCH>			REL-6
>>>>TrCh information	MP		MBMS Common TrCh identity 10.3.9a.4	Refers to a (TFS) configuration in the common RB info	REL-6
>>>>TrCh combining status	MP		BOOLEAN	Value TRUE means that TrCh combining is used for this transport channel (TDD only). Note 2.	REL-6
>>>>RB information list	OP	1 to <maxRBperTrCh>		The IE is absent if (temporarily) no RBs corresponding with services provided in the current cell are mapped to this TrCh or if the TrCH only carries MCCH and/ or MSCH	REL-6
>>>>>RB information	MP		MBMS p-t-m RB information 10.3.9a.7a		REL-6
>>>>MSCH configuration information	OP		MSCH configuration information 10.3.9a.16	Included if the TrCH carries MSCH	

NOTE 1: The signalling supports the option that UTRAN maps one service to L1 combining slots for some neighbours and to the L2 combining slots for other neighbours ie. the use of different combining schemes for different neighbours

NOTE 2: Transport combining can only be indicated when the complete L2 configuration is provided for the neighbouring cell (i.e. using L2 configuration choice “different”). Fortunately, a scenario in which the neighbouring cell configuration is different from the current cell is regarded as the typical scenario for using transport combining.

Condition	Explanation
Soft	This IE is mandatory present if the IE "Type of L1-combining" is included and set to ‘soft’ and not needed otherwise.

10.3 Information element functional definitions

10.3.4 Radio Bearer Information elements

10.3.4.8 RAB info

This IE contains information used to uniquely identify a radio access bearer.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
RAB identity	MP		RAB identity 10.3.1.14		
MBMS Session identity	~~OP~~CV-*Message*		MBMS Session identity 10.3.9a.9		REL-6
CN domain identity	MP		CN domain identity 10.3.1.1		
NAS Synchronization Indicator	OP		NAS Synchronization indicator 10.3.4.12		
Re-establishment timer	MP		Re-establishment timer 10.3.3.30		

Condition	Explanation
Message	This IE is optionally present in the RADIO BEARER SETUP and the SRNS RELOCATION INFO messages and not needed otherwise.

10.3.4.23 RLC info

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE *Uplink RLC mode*	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used.	
>AM RLC					
>>Transmission RLC discard	MP		Transmission RLC discard 10.3.4.25		
>>Transmission window size	MP		Integer(1,8,16,32,64,128,256,512,768,1024,1536,2047,2560,3072,3584,4095)	Maximum number of RLC PUs sent without getting them acknowledged. This parameter is needed if acknowledged mode is used. UE shall also assume that the UTRAN receiver window is equal to this value.	
>>Timer_RST	MP		Integer(50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 700, 800, 900, 1000)	Elapsed time in milliseconds. It is used to trigger the retransmission of RESET PDU.	
>>Max_RST	MP		Integer(1, 4, 6, 8, 12 16, 24, 32)	Defined in [16]	
>>Polling info	OP		Polling info 10.3.4.4		
>UM RLC					
>>Transmission RLC discard	OP		Transmission RLC discard 10.3.4.25		
>TM RLC					
>>Transmission RLC discard	OP		Transmission RLC discard 10.3.4.25		
>>Segmentation indication	MP		Boolean	TRUE indicates that segmentation is performed.	
CHOICE *Downlink RLC mode*	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used	
>AM RLC					

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>>DL RLC PDU size	MP		Integer(16..5000 by step of 8)	Unit is bits	REL-5
>>In-sequence delivery	MP		Boolean	TRUE indicates that RLC shall preserve the order of higher layer PDUs when these are delivered. FALSE indicates that receiving RLC entity could allow SDUs to be delivered to the higher layer in different order than submitted to RLC sublayer at the transmitting side.	
>>Receiving window size	MP		Integer(1,8,16,32,64,128,256,512,768,1024,1536,2047,2560,3072,3584,4095)	Maximum number of RLC PUs allowed to be received. This parameter is needed if acknowledged mode is used. UE shall also assume that the UTRAN transmitter window is equal to this value	
>>Downlink RLC status Info	MP		Downlink RLC status info 10.3.4.1		
>UM RLC				~~(No data)~~	
>>DL UM RLC LI size	MP		Integer(7, 15)	Size in bits to use for the downlink RLC UM LI.	REL-5
~~>>DL Duplication Avoidance and Reordering info~~	~~OP~~		~~UM Duplication Avoidance and Reordering info 10.3.4.26~~		~~REL-6~~
~~>>DL Out of sequence delivery info~~	~~OP~~		~~UM Out of sequence delivery info 10.3.4.27~~		~~REL-6~~
>TM RLC					
>>Segmentation indication	MP		Boolean	TRUE indicates that segmentation is performed.	
One sided RLC re-establishment	MP		Boolean	TRUE indicates that only one side of the AM RLC entity is re-established.	REL-5

NOTE: This information element is included within IE "Predefined RB configuration".

10.3.4.23a RLC info MBMS

The IE PTM RLC info is used for point-to-multipoint radio bearers, featuring only the downlink RLC UMD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
DL UM RLC LI size	MP		Integer (7, 15)	Size in bits to use for the downlink RLC UM LI.	REL-6
DL Duplication Avoidance and Reordering info	OP		UM Duplication Avoidance and Reordering info 10.3.4.26		REL-6
DL Out of sequence delivery info	OP		UM Out of sequence		REL-6

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			delivery info 10.3.4.27		

10.3.9a MBMS Information elements

10.3.9a.13 MCCH configuration information

Includes information about the MCCH configuration.

Information element/Group name	Need	Multi	Type and reference	Semantics description	Version
Access Info Period coefficient	MD		Integer (0..3)	Represents a, the access information coefficient. The number of repetitions per modification period equals 2^a while the actual access information period, in number of frames, equals MP DIV 2^a	REL-6
Repetition Period coefficient	MP		Integer (0..3)	Represents r, the repetition period coefficient. The number of repetitions per modification period equals 2^r while the actual repetition period, in number of frames, equals MP DIV 2^r	REL-6
Modification period coefficient	MP		Integer (7..10)	Represents m, the modification period coefficient. The actual modification period, in number of frames, equals 2^r	REL-6
RLC info	MP		RLC info MBMS 10.3.4.23a		REL-6
TCTF presence	CV-rel6		Enumerated (false)	By default the TCTF is present even though the FACH only carries one logical channel (type). When this IE is included, the TCTF is absent	REL-6

Condition	Explanation
rel6	This IE is not needed if the IE is contained within the IE "Secondary CCPCH system information", otherwise the IE is optional.

10.3.9a.16 MSCH configuration information

Includes information about the MSCH configuration.

Information element/Group name	Need	Multi	Type and reference	Semantics description	Version
MSCH configuration information	MP			Scheduling information is provided starting at SFN mod MSCH_REP = MSCH_OFF	REL-6
>Scheduling period	MD		Enumerated (32, 64, 128, 256, 512, 1024)	The period, in number of frames, between MBMS scheduling messages (MSCH_REP) Default value is the value included in the MBMS GENERAL INFORMATION message	REL-6
>Scheduling offset	MD		Integer (0..(MSCH_REP-1))	The position of MBMS scheduling messages relative to timing of the corresponding cell (MSCH_OFF) Default value is the value included in the MBMS GENERAL INFORMATION message	REL-6
>RLC info	MD		RLC info MBMS 10.3.4.23a	Default value is the one included in the MBMS GENERAL INFORMATION message	REL-6
TCTF presence	OP		Enumerated (false)	By default the TCTF is present even though the FACH only carries one logical channel (type). When this IE is included, the TCTF is absent	REL-6

11 Message and Information element abstract syntax (with ASN.1)

11.2 PDU definitions

```
--**************************************************************
--
-- TABULAR: The message type and integrity check info are not
-- visible in this module as they are defined in the class module.
-- Also, all FDD/TDD specific choices have the FDD option first
-- and TDD second, just for consistency.
--
--**************************************************************

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

--**************************************************************
--
-- IE parameter types from other modules
--
--**************************************************************

IMPORTS

-- Core Network IEs :
    CN-DomainIdentity,
    CN-InformationInfo,
    CN-InformationInfoFull,
    NAS-Message,
    PagingRecordTypeID,
    PLMN-Identity,
-- UTRAN Mobility IEs :
    CellIdentity,
    CellIdentity-PerRL-List,
    URA-Identity,
-- User Equipment IEs :
    UE-RadioAccessCapabBandFDDList2,
    UE-RadioAccessCapabBandFDDList-ext,
    AccessStratumReleaseIndicator,
    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CapabilityUpdateRequirement-r4,
    CapabilityUpdateRequirement-r4-ext,
    CapabilityUpdateRequirement-r5,
    CellUpdateCause,
    CellUpdateCause-ext,
    CipheringAlgorithm,
    CipheringModeInfo,
    DSCH-RNTI,
    E-RNTI,
    EstablishmentCause,
    FailureCauseWithProtErr,
    FailureCauseWithProtErrTrId,
    GroupReleaseInformation,
    H-RNTI,
    UESpecificBehaviourInformation1idle,
    UESpecificBehaviourInformation1interRAT,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    N-308,
    PagingCause,
    PagingRecordList,
    PagingRecord2List-r5,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithMoreInfo,
    RadioFrequencyBandTDDList,
```

```
    Rb-timer-indicator,
    RedirectionInfo,
    RedirectionInfo-r6,
    RejectionCause,
    ReleaseCause,
    RF-CapabilityComp,
    RRC-StateIndicator,
    RRC-TransactionIdentifier,
    SecurityCapability,
    START-Value,
    STARTList,
    SystemSpecificCapUpdateReq-v590ext,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    UE-RadioAccessCapability-v370ext,
    UE-RadioAccessCapability-v380ext,
    UE-RadioAccessCapability-v3a0ext,
    UE-RadioAccessCapability-v3g0ext,
    UE-RadioAccessCapability-v4b0ext,
    UE-RadioAccessCapability-v590ext,
    UE-RadioAccessCapability-v5c0ext,
    UE-RadioAccessCapability-v650ext,
    UE-RadioAccessCapabilityComp,
    DL-PhysChCapabilityFDD-v380ext,
    UE-ConnTimersAndConstants,
    UE-ConnTimersAndConstants-v3a0ext,
    UE-ConnTimersAndConstants-r5,
    UE-SecurityInformation,
    URA-UpdateCause,
    UTRAN-DRX-CycleLengthCoefficient,
    WaitTime,
-- Radio Bearer IEs :
    DefaultConfigIdentity,
    DefaultConfigIdentity-r4,
    DefaultConfigIdentity-r5,
    DefaultConfigMode,
    DL-CounterSynchronisationInfo,
    DL-CounterSynchronisationInfo-r5,
    PredefinedConfigIdentity,
    PredefinedConfigStatusList,
    PredefinedConfigStatusListComp,
    PredefinedConfigSetWithDifferentValueTag,
    RAB-Info,
    RAB-Info-Post,
    RAB-InformationList,
    RAB-InformationReconfigList,
    RAB-InformationSetupList,
    RAB-InformationSetupList-r4,
    RAB-InformationSetupList-r5,
    RAB-InformationSetupList-r6-ext,
    RAB-InformationSetupList-r6,
    RB-ActivationTimeInfoList,
    RB-COUNT-C-InformationList,
    RB-COUNT-C-MSB-InformationList,
    RB-IdentityList,
    RB-InformationAffectedList,
    RB-InformationAffectedList-r5,
    RB-InformationAffectedList-r6,
    RB-InformationReconfigList,
    RB-InformationReconfigList-r4,
    RB-InformationReconfigList-r5,
    RB-InformationReconfigList-r6,
    RB-InformationReleaseList,
    RB-PDCPContextRelocationList,
    SRB-InformationSetupList,
    SRB-InformationSetupList-r5,
    SRB-InformationSetupList-r6,
    SRB-InformationSetupList2,
    UL-CounterSynchronisationInfo,
-- Transport Channel IEs:
    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
    DL-AddReconfTransChInfoList,
    DL-AddReconfTransChInfoList-r4,
    DL-AddReconfTransChInfoList-r5,
    DL-CommonTransChInfo,
    DL-CommonTransChInfo-r4,
```

```
    DL-DeletedTransChInfoList,
    DL-DeletedTransChInfoList-r5,
    DRAC-StaticInformationList,
    TFC-Subset,
    TFCS-Identity,
    UL-AddReconfTransChInfoList,
    UL-AddReconfTransChInfoList-r6,
    UL-CommonTransChInfo,
    UL-CommonTransChInfo-r4,
    UL-DeletedTransChInfoList,
    UL-DeletedTransChInfoList-r6,
-- Physical Channel IEs :
    Alpha,
    BEACON-PL-Est,
    CCTrCH-PowerControlInfo,
    CCTrCH-PowerControlInfo-r4,
    CCTrCH-PowerControlInfo-r5,
    ConstantValue,
    ConstantValueTdd,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-CommonInformation-r4,
    DL-CommonInformation-r5,
    DL-CommonInformation-r6,
    DL-CommonInformationPost,
    DL-HSPDSCH-Information,
    DL-InformationPerRL-List,
    DL-InformationPerRL-List-r4,
    DL-InformationPerRL-List-r5,
    DL-InformationPerRL-List-r5bis,
    DL-InformationPerRL-List-r6,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-InformationPerRL-PostTDD-LCR-r4,
    DL-PDSCH-Information,
    DL-TPC-PowerOffsetPerRL-List,
    DPC-Mode,
    DPCH-CompressedModeStatusInfo,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    HARQ-Preamble-Mode,
    HS-SICH-Power-Control-Info-TDD384,
    MaxAllowedUL-TX-Power,
    OpenLoopPowerControl-IPDL-TDD-r4,
    PDSCH-CapacityAllocationInfo,
    PDSCH-CapacityAllocationInfo-r4,
    PDSCH-Identity,
    PrimaryCPICH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-CapacityAllocationInfo-r4,
    PUSCH-Identity,
    PUSCH-SysInfoList-HCR-r5,
    PDSCH-SysInfoList-HCR-r5,
    RL-AdditionInformationList,
    RL-AdditionInformationList-r6,
    RL-RemovalInformationList,
    SpecialBurstScheduling,
    SSDT-Information,
    SSDT-Information-r4,
    TFC-ControlDuration,
    SSDT-UL,
    TimeslotList,
    TimeslotList-r4,
    TX-DiversityMode,
    UL-ChannelRequirement,
    UL-ChannelRequirement-r4,
    UL-ChannelRequirement-r5,
    UL-ChannelRequirement-r6,
    UL-ChannelRequirementWithCPCH-SetID,
    UL-ChannelRequirementWithCPCH-SetID-r4,
    UL-ChannelRequirementWithCPCH-SetID-r5,
    UL-ChannelRequirementWithCPCH-SetID-r6,
    UL-DPCH-Info,
    UL-DPCH-Info-r4,
    UL-DPCH-Info-r5,
    UL-DPCH-Info-r6,
```

```
    UL-DPCH-InfoPostFDD,
    UL-DPCH-InfoPostTDD,
    UL-DPCH-InfoPostTDD-LCR-r4,
    UL-EDCH-Information-r6,
    UL-SynchronisationParameters-r4,
    UL-TimingAdvance,
    UL-TimingAdvanceControl,
    UL-TimingAdvanceControl-r4,
-- Measurement IEs :
    AdditionalMeasurementID-List,
    DeltaRSCP,
    Frequency-Band,
    EventResults,
    Inter-FreqEventCriteriaList-v590ext,
    Intra-FreqEventCriteriaList-v590ext,
    IntraFreqReportingCriteria-1b-r5,
    IntraFreqEvent-1d-r5,
    InterFreqEventResults-LCR-r4-ext,
    InterRATCellInfoIndicator,
    InterRAT-TargetCellDescription,
    MeasuredResults,
    MeasuredResults-v390ext,
    MeasuredResults-v590ext,
    MeasuredResultsList,
    MeasuredResultsList-LCR-r4-ext,
    MeasuredResultsOnRACH,
    MeasurementCommand,
    MeasurementCommand-r4,
    MeasurementIdentity,
    MeasurementReportingMode,
    PrimaryCCPCH-RSCP,
    SFN-Offset-Validity,
    TimeslotListWithISCP,
    TrafficVolumeMeasuredResultsList,
    UE-Positioning-GPS-AssistanceData,
    UE-Positioning-Measurement-v390ext,
    UE-Positioning-OTDOA-AssistanceData,
    UE-Positioning-OTDOA-AssistanceData-r4ext,
    UE-Positioning-OTDOA-AssistanceData-UEB,
-- Other IEs :
    BCCH-ModificationInfo,
    CDMA2000-MessageList,
    GSM-TargetCellInfoList,
    GERANIu-MessageList,
    GERAN-SystemInformation,
    GSM-MessageList,
    InterRAT-ChangeFailureCause,
    InterRAT-HO-FailureCause,
    InterRAT-UE-RadioAccessCapabilityList,
    InterRAT-UE-RadioAccessCapability-v590ext,
    InterRAT-UE-SecurityCapList,
    IntraDomainNasNodeSelector,
    ProtocolErrorMoreInformation,
    Rplmn-Information,
    Rplmn-Information-r4,
    SegCount,
    SegmentIndex,
    SFN-Prime,
    SIB-Data-fixed,
    SIB-Data-variable,
    SIB-Type,
-- MBMS IEs:
    MBMS-CellGroupIdentity-r6,
    MBMS-CommonRBInformationList-r6,
    MBMS-CurrentCell-SCCPCHList-r6,
    MBMS-JoinedInformation-r6,
    MBMS-MICHConfigurationInfo-r6,
    MBMS-ModifedServiceList-r6,
    MBMS-MSCHConfigurationInfo-r6,
    MBMS-NeighbouringCellID-r6,
    MBMS-NeighbouringCellSCCPCHList-r6,
    MBMS-PhyChInformationList-r6,
    MBMS-PL-ServiceRestrictInfo-r6,
    MBMS-PreferredFreqRequest-r6,
    MBMS-PreferredFrequencyList-r6,
    MBMS-ServiceAccessInfoList-r6,
    MBMS-ServiceSchedulingInfoList-r6,
    MBMS-SIBType5-SCCPCHList-r6,
    MBMS-TimersAndCouneters-r6,
```

```
    MBMS-TranspChInfoForEachCCTrCh-r6,
    MBMS-TranspChInfoForEachTrCh-r6,
    MBMS-UnmodifiedServiceList-r6
FROM InformationElements

    maxSIBperMsg,
    maxURNTI-Group
FROM Constant-definitions;

    :

-- ************************************************
--
-- MBMS MODIFIED SERVICES INFORMATION
--
-- ************************************************

MBMSModifiedServicesInformation ::= SEQUENCE {
    -- MBMS Modified Services Information IEs
        modifedServiceList              MBMS-ModifedServiceList-r6          OPTIONAL,
        mbms-ReacquireMCCH              BOOLEAN,
        endOfModifiedMCCHInformation    INTEGER (1..1516)                       OPTIONAL,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

-- ************************************************
--
-- MBMS NEIGHBOURING CELL PTM RB INFORMATION
--
-- ************************************************

MBMSNeighbouringCellPTMRBInformation ::= SEQUENCE {
    -- MBMS Neighbouring Cell PTM RB Information IEs
        neighbouringCellIdentity        MBMS-NeighbouringCellID-r6,INTEGER (1), -- FFS
        neighbouringCellSCCPCHList      MBMS-NeighbouringCellSCCPCHList-r6,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

    :

-- ************************************************
--
-- MBMS UNMODIFIED SERVICES INFORMATION
--
-- ************************************************

MBMSUnmodifiedServicesInformation ::= SEQUENCE {
    -- MBMS Unmodified Services Information IEs
        unmodifiedServiceList           MBMS-UnmodifiedServiceList-r6       OPTIONAL,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}
```

11.3 Information element definitions

```
    :

-- **************************************************
--
--     RADIO BEARER INFORMATION ELEMENTS (10.3.4)
--
-- **************************************************

    :

DL-RLC-Mode-r5 ::=                      CHOICE {
    dl-AM-RLC-Mode-r5                   DL-AM-RLC-Mode-r5,
    dl-UM-RLC-Mode-r5                   DL-UM-RLC-Mode-r5,
    dl-TM-RLC-Mode                      DL-TM-RLC-Mode
}

DL-RLC-Mode-r6 ::=                      CHOICE {
    dl-AM-RLC-Mode-r5                   DL-AM-RLC-Mode-r5,
    dl-UM-RLC-Mode-r5                   DL-UM-RLC-Mode-r6,
    dl-TM-RLC-Mode                      DL-TM-RLC-Mode
}

    :

DL-UM-RLC-Mode-r5 ::=                   SEQUENCE {
    dl-UM-RLC-LI-size                   DL-UM-RLC-LI-size
}

DL-UM-RLC-Mode-r6 ::=               SEQUENCE {
    dl-UM-RLC-LI-size                   DL-UM-RLC-LI-size,
    dl-UM-RLC-DuplAvoid-Reord-Info      UM-RLC-DuplAvoid-Reord-Info-r6      OPTIONAL,
    dl-UM-RLC-OutOSeqDelivery-Info      UM-RLC-OutOSeqDelivery-Info-r6      OPTIONAL
}

    :

PredefinedConfigStatusListVarSz ::=     SEQUENCE (SIZE (1..maxPredefConfig)) OF
                                            PredefinedConfigStatusInfo

RAB-Info ::=                            SEQUENCE {
    rab-Identity                        RAB-Identity,
    cn-DomainIdentity                   CN-DomainIdentity,
    nas-Synchronisation-Indicator       NAS-Synchronisation-Indicator   OPTIONAL,
    re-EstablishmentTimer               Re-EstablishmentTimer
}

    :

RLC-Info-r5 ::=                         SEQUENCE {
    ul-RLC-Mode                         UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode-r5                      DL-RLC-Mode-r5                      OPTIONAL,
    rlc-OneSidedReEst                   BOOLEAN
}

RLC-Info-r6 ::=                         SEQUENCE {
    ul-RLC-Mode                         UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode-r5                      DL-RLC-Mode-r6                      OPTIONAL,
    rlc-OneSidedReEst                   BOOLEAN
}

RLC-Info-MBMS-r6 ::=                    SEQUENCE {
    dl-UM-RLC-LI-size                   DL-UM-RLC-LI-size,
    dl-UM-RLC-DuplAvoid-Reord-Info      UM-RLC-DuplAvoid-Reord-Info-r6      OPTIONAL,
    dl-UM-RLC-OutOSeqDelivery-Info      UM-RLC-OutOSeqDelivery-Info-r6      OPTIONAL
}

    :

-- **************************************************
--
--     MBMS INFORMATION ELEMENTS (10.3.9a)
--
```

```
-- **************************************************

    :

MBMS-CommonRBInformation-r6 ::=     SEQUENCE {
    commonRBIdentity                    MBMS-CommonRBIdentity,
    pdcp-Info                           PDCP-Info-r4,
    rlc-Info                            RLC-Info-r6RLC-Info-MBMS-r6
}

    :

MBMS-MCCH-ConfigurationInfo-r6 ::=  SEQUENCE {
    accessInfoPeriodCoefficient         INTEGER (0..3),
    repetitionPeriodCoefficient         INTEGER (0..3),
    modificationPeriodCoefficient       INTEGER (7..10),
    rlc-Info                            RLC-Info-r6RLC-Info-MBMS-r6,
    tctf-Presence                       MBMS-TCTF-Presence                  OPTIONAL
}

    :

MBMS-MSCHConfigurationInfo-r6 ::=   SEQUENCE {
    mschShedulingInfo                   MBMS-MSCHSchedulingInfo             OPTIONAL,
    rlc-Info                            RLC-Info-r6RLC-Info-MBMS-r6
    OPTIONAL,
    tctf-Presence                       MBMS-TCTF-Presence                  OPTIONAL
}

    :

MBMS-NeighbouringCellID-r6 ::=      INTEGER (0..maxCellMeas-1)

MBMS-NeighbouringCellSCCPCH-r6 ::=  SEQUENCE {
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    rakeCombinableGroupId               MBMS-RakeCombinableGroupId          OPTIONAL,
    layer1Combining                     CHOICE {
        fdd                                 SEQUENCE {
            typeOfL1Combining                   MBMS-TypeOfL1Combining,
            mbms-L1CombiningSchedule            MBMS-L1CombiningSchedule    OPTIONAL
        },
        tdd                                 NULL
    }       OPTIONAL,
    mbms-L23Configuration               MBMS-L23Configuration
}
```

3GPP TSG-RAN WG2 Meeting #47
Athens, Greece, 9 – 13 May 2005

Tdoc ⌘R2-051563
Revised: R2-051558

CR-Form-v7.1

CHANGE REQUEST

⌘ **25.331** **CR** **2614** ⌘**rev** **-** ⌘ Current version: **6.5.0** ⌘

*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:	⌘	SCCPCH timing offset information for FDD MBMS soft combining
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	12/05/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

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:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	For FDD, S-CCPCH to be soft combined must be synchronized to within 1 TTI + 1 slot. The existing mechanism of using S-CCPCH time offset may require excessive signaling overhead, since it is in the Common PTM RB information.
Summary of change:	⌘	A new timing offset is added to S-CCPCH that may be soft combined. The timing offset requires 2 bits, and is a multiple of radio frames. The timing offset is used for S-CCPCH that only carry MSCH and/or MTCH, as the timing offset is only needed for MBMS soft combining.
Consequences if not approved:	⌘	If the CR is not approved, either a) the MCCH signaling load will be unacceptably large, or b) assuming Node B synchronization procedures are used, there will be insufficient timing margin and MBMS radio links will not be able to be soft combined.

Clauses affected:	⌘	8.5.15, 8.5.15.3, 8.5.14.5 *(new)*, 10.2.16g,10.2.16k, 10.3.9a.17 *(new)*, 11.3			
		Y	**N**		
Other specs	⌘	**X**		Other core specifications	⌘ 25.433 CR 1124 25.402 CR 0050
affected:			**X**	Test specifications	
			X	O&M Specifications	
Other comments:	⌘	Note: the present version of this CR clashes with CR 2548 (R2-051110) agreed by Email after the last meeting. Two implementation notes have been included in			

	this CR to indicate how the two CRs can be merged.

8.5.15 CFN calculation

The DOFF used in the formulas in this clause concerns the value of IE "Default DPCH Offset Value" received in the message that instructs the UE to enter CELL_DCH state or to perform timing re-initialised hard handover.

Section 8.5.15.5 is used in FDD to initialise the CFN for MTCH and/or MSCH if the IE "MBMS Soft Combining Timing Offset" is included for an S-CCPCH in MBMS CURRENT CELL P-T-M RB INFORMATION or MBMS NEIGHBOURING CELL P-T-M RB INFORMATION, and if only MTCH and/or MSCH are on the S-CCPCH. Otherwise, sections 8.5.15.1 through 8.5.15.4 are used to intialise the CFN.

8.5.15.1 Initialisation for CELL_DCH state after state transition

When the UE receives any of the messages causing the UE to perform a state transition to CELL_DCH, the UE shall set the CFN in relation to the SFN of the first radio link listed in the IE "Downlink information per radio link list" included in that message according to the following formula:

- for FDD:

$$CFN = (SFN - (DOFF \text{ div } 38400)) \bmod 256$$

  where the formula gives the CFN of the downlink DPCH or F-DPCH frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

- for TDD:

$$CFN = (SFN - DOFF) \bmod 256.$$

8.5.15.2 Initialisation in CELL_DCH state at hard handover

When the UE is in CELL_DCH state and receives any of the messages causing the UE to perform a hard handover, the UE shall check the IE "Timing indication" in that message and:

1> if IE "Timing indication" has the value "initialise" (i.e. timing re-initialised hard handover):

2> read SFN on target cell identified by the first radio link listed in the IE "Downlink information per radio link list" included in that message;

2> set the CFN according to the following formula:

3> for FDD:

$$CFN = (SFN - (DOFF \text{ div } 38400)) \bmod 256$$

where the formula gives the CFN of the downlink DPCH or F-DPCH frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

3> for TDD:

$$CFN = (SFN - DOFF) \bmod 256.$$

1> if IE "Timing indication" has the value "maintain" (i.e. timing-maintained hard handover), the UE shall keep CFN with no change due to the hard handover, and only increase CFN (mod 256) by 1 every frame.

8.5.15.3 Initialisation for CELL_FACH

Unless the conditions of section 8.15.5.5 are met, ~~W~~when the UE performs cell selection, re-selection or changes to CELL_FACH state the UE shall set CFN for all common or shared channels according to:

$$CFN = SFN \bmod 256$$

where the formula gives the CFN of the downlink common or shared channel frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

After the initialisation, the CFN in the UE is increased (mod 256) by 1 every frame.

8.5.15.4 Initialisation after intersystem handover to UTRAN

Upon inter RAT handover to UTRAN the UE shall, regardless of the value received within IE "Timing indication" (if received):

1> read SFN on target cell and set the CFN according to the following formula:

2> for FDD:

$$CFN = (SFN - (DOFF \text{ div } 38400)) \bmod 256$$

where the formula gives the CFN of the downlink DPCH frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

2> for TDD:

$$CFN = (SFN - DOFF) \bmod 256.$$

8.5.15.5 Initialisation for MTCH and/or MSCH carried on S-CCPCH that may be soft combined

For FDD, if the IE "MBMS Soft Combining Timing Offset" is included for an S-CCPCH in MBMS CURRENT CELL P-T-M RB INFORMATION or MBMS NEIGHBOURING CELL P-T-M RB INFORMATION, and if only MTCH and/or MSCH are on the S-CCPCH, the UE shall set CFN for the S-CCPCH according to:

$$CFN = (SFN - (SCTO \text{ div } 10ms)) \bmod 256$$

where the formula gives the CFN of the downlink S-CCPCH frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

the SCTO used in the formula is the IE "MBMS Soft Combining Timing Offset".

After the initialisation, the CFN in the UE is increased (mod 256) by 1 every frame.

10.2.16g MBMS CURRENT CELL P-T-M RB INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the PTM RB configuration used to in a cell, in case one or more MBMS service is provided using p-t-m radio bearers. The message contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type	Current cell PTM RB info	REL-6
S-CCPCH list	OP	1 to <maxSCCPCH>		Absent in case MTCH are only mapped to the S-CCPCH(s) included in SIB type 5	REL-6
>S-CCPCH identity	OP		MBMS Current cell S-CCPCH identity 10.3.9a.5	When L1- combining applies, this identity is used to refer to this S-CCPCH within the NEIGHBOURING CELL P-T-M RB INFORMATION message	REL-6
>Secondary CCPCH info	MP		MBMS Common PhyCh identity 10.3.9a.2	Refers to a configuration in the common RB info	REL-6
>MBMS Soft Combining Timing Offset	CV-*Soft-FDD*		MBMS Soft Combining Timing Offset 10.3.9a.17	Timing offset applied in the CFN calculation in sub-clause 8.5.15.5. The default value is 0 ms.	REL-6
>TrCh information common for all TrCh	MP		MBMS Common CCTrCh identity 10.3.9a.1	Refers to a (TFCS) configuration in the common RB info	REL-6
>TrCH information list	MP	1 to <maxTrChperSCCPCH>		List of FACH transport channels carrying one or more MTCH	REL-6
>>TrCh information	MP		MBMS Common TrCh identity 10.3.9a.4	Refers to a (TFS) configuration in the common RB info	REL-6
>>RB information list	OP	1 to <maxRBperTrCh>		The IE is absent if temporarily no RBs are mapped to this TrCh or if the TrCH only carries MSCH	REL-6
>>>RB information	MP		MBMS p-t-m RB information 10.3.9a.7a		REL-6
>>MSCH configuration information	MP		MSCH configuration information 10.3.9a.16		REL-6
S-CCPCH in SIB type 5	OP	1 to <maxSCCPCH>		Every S-CCPCH's included in SIB type 5 may carry MTCH	REL-6
>S-CCPCH identity			Integer (1..maxSCCPCH)	Index of the S-CCPCH within the list included in SIB type 5	REL-6
>TrCH information list	MP	1 to <maxFACHPCH>		List of FACH transport channels carrying one or more MTCH	REL-6
>>TrCh identity	MP		Integer	Index of the FACH within the list	REL-6

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			(1..maxFACHPCH)	of TrChs defined for that S-CCPCH as included in SIB type 5	
>>RB information list	OP	1 to <maxRBperTrCh>		The IE is absent if this TrCh only carries MSCH	REL-6
>>>RB information	MP		MBMS p-t-m RB information 10.3.9a.7a		REL-6
>>MSCH configuration information	OP		MSCH configuration information 10.3.9a.16	Included if the TrCH carries MSCH	REL-6

Condition	Explanation
Soft-FDD	This IE is used only for FDD. It is mandatory default for FDD if the IE "L1 combining" is included in MBMS NEIGHBOURING CELL P-T-M RB INFORMATION. Otherwise it is not needed.

10.2.16k MBMS NEIGHBOURING CELL P-T-M RB INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the p-t-m RB configuration used to in neighbouring cells, indicating the UE may perform selection and/ or soft combining. The message contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Neighbouring cell identity	MP		Integer (1..X)	Assumption is to use a short index eg. pointer to SIB 11/ 12	REL-6
Neighbouring cell's S-CCPCH list	MP	1 to <maxSCCPCH>			REL-6
>Secondary CCPCH info	MP		MBMS Common PhyCh identity 10.3.9a.2	S-CCPCH configuration used in neighbouring cell. Refers to a configuration in the common RB info	REL-6
>Rake combinable group id	OP		Integer (0..15)	The IE should only be used in case of FDD. Indicates a group of cells for which Rake combining may be performed	REL-6
>>L1 combining	OP			L2- combining applies if the IE is absent	REL-6
>>CHOICE *mode*	MP				REL-6
>>>FDD					REL-6
>>>>Type of L1-combining	MP		Enumerated (Rake, Soft)	In case the IE is set to 'Rake', the current and the neighbouring cell are in the same S-CCPCH cluster, as defined in [29]. Each combining method has different transmission time difference requirements, as specified in [19, 20]	REL-6
>>>>MBMS Soft Combining Timing Offset	CV-*Soft*		MBMS Soft Combining Timing Offset 10.3.9a.17	Timing offset applied in the CFN calculation in sub-clause 8.5.15.5.	REL-6
>>>>MBMS transmission time difference	CV-*Soft*		Integer (0..3)	Indicates the time difference between the TTIs on the current and the neighbouring cell's SCCPCH that can be L1-combined	REL-6
>>>>MBMS L1 combining schedule	OP		MBMS L1 combining schedule 10.3.9a.7	If included partial layer 1 (Soft) combining applies, in which case this IE indicates when L1-combining applies. If the IE is absent, L1 combining applies continuously	REL-6
>>>TDD				(no data)	REL-6
>CHOICE L23 configuration	MP				REL-6

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>>SameAs Current cell				Apart from the physical channel configuration and the MSCH configuration information, the same configuration as for the indicated S-CCPCH used in the current cell applies	REL-6
>>>Current cell's S-CCPCH	MP		MBMS Current cell S-CCPCH identity 10.3.9a.5	Reference to the S-CCPCH in the current cell with which applies exaclty the same configuration	REL-6
>>>MSCH configuration information	MP		MSCH configuration information 10.3.9a.16		REL-6
>>Different					REL-6
>>>TrCh information for common for all TrCh	MP		MBMS Common CCTrCh identity 10.3.9a.1	Refers to a (TFCS) configuration in the common RB info	REL-6
>>>TrCH information	MP	1 to <maxFACHPCH>			REL-6
>>>>TrCh information	MP		MBMS Common TrCh identity 10.3.9a.4	Refers to a (TFS) configuration in the common RB info	REL-6
>>>>TrCh combining status	MP		BOOLEAN	Value TRUE means that TrCh combining is used for this transport channel (TDD only). Note 2.	REL-6
>>>>RB information list	OP	1 to <maxRBperTrCh>		The IE is absent if (temporarily) no RBs corresponding with services provided in the current cell are mapped to this TrCh or if the TrCH only carries MCCH and/ or MSCH	REL-6
>>>>>RB information	MP		MBMS p-t-m RB information 10.3.9a.7a		REL-6
>>>>MSCH configuration information	OP		MSCH configuration information 10.3.9a.16	Included if the TrCH carries MSCH	

NOTE 1: The signalling supports the option that UTRAN maps one service to L1 combining slots for some neighbours and to the L2 combining slots for other neighbours ie. the use of different combining schemes for different neighbours

NOTE 2: Transport combining can only be indicated when the complete L2 configuration is provided for the neighbouring cell (i.e. using L2 configuration choice “different”). Fortunately, a scenario in which the neighbouring cell configuration is different from the current cell is regarded as the typical scenario for using transport combining.

Condition	Explanation
Soft	This IE is mandatory present if the IE "Type of L1-combining" is included and set to ‘soft’ and not needed otherwise.

10.3.9a MBMS Information elements

10.3.9a.17 MBMS Soft Combining Timing Offset

Indicates the timing offset applied in the CFN calculation in sub-clause 8.5.15.5 for a secondary CCPCH carrying only MBMS logical channels. It is used for FDD only.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>MBMS Soft Combining Timing Offset	MP		Integer (0, 10, 20, 40)	Timing offset applied in the CFN calculation in sub-clause 8.5.15.5, in ms.	REL-6

11.3 Information element definitions

```
-- **************************************************
--
--     MBMS INFORMATION ELEMENTS (10.3.9a)
--
-- **************************************************

    :

MBMS-CurrentCell-SCCPCH-r6 ::=      SEQUENCE {
    sccpchIdentity                      MBMS-SCCPCHIdentity                 OPTIONAL,
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    softComb-TimingOffset               MBMS-SoftComb-TimingOffset          DEFAULT ms0,
    transpCh-InfoCommonForAllTrCh       MBMS-CommonCCTrChIdentity,
    transpCHInformation                 MBMS-TrCHInformation-CommList
}

    :

MBMS-NeighbouringCellSCCPCH-r6 ::=  SEQUENCE {
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    rakeCombinableGroupId               MBMS-RakeCombinableGroupId          OPTIONAL,
    layer1Combining                     CHOICE {
        fdd                                 SEQUENCE {
            typeOfL1Combining                   MBMS-TypeOfL1Combining,
            mbms-L1CombiningSchedule            MBMS-L1CombiningSchedule    OPTIONAL
        },
        tdd                                 NULL
    }       OPTIONAL,
    mbms-L23Configuration               MBMS-L23Configuration
}

    :

MBMS-RequiredUEAction-UMod ::=      ENUMERATED {
                                        none,
                                        acquirePTM-RBInfo,
                                        establishPMMConnection }

MBMS-SoftComb-TimingOffset ::=      ENUMERATED { ms0, ms10, ms20, ms40 }

MBMS-SCCPCHIdentity ::=             INTEGER (1..maxSCCPCH)

    :

MBMS-TypeOfL1Combining ::=          CHOICE {
    rake                                NULL,
    soft                                SEQUENCE {MBMS-L1CombiningTransmTimeDiff
        softComb-TimingOffset               MBMS-SoftComb-TimingOffset,
        mbms-L1CombiningTransmTimeDiff      MBMS-L1CombiningTransmTimeDiff
    }
}
```

3GPP TSG-RAN2 Meeting #47
Athens, Greece, 9th- 13th May, 2005

Tdoc ⌘ R2-051562

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2615** ⌘ **rev** **-** ⌘ Current version: **6.5.0** ⌘

*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 corrections on signalling optimization
Source:	⌘	RAN WG2
Work item code:	⌘	MBMS-RAN
Date:	⌘	05/2005
Category:	⌘	**F**
Release:	⌘	REL-6

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:	⌘	Following MBMS signallings are not optimized. - MBMS preferred frequency information in MBMS MODIFICATION REQUEST needs 28bits while MBMS service identity needs 24bits - It is not clear which RB information lists should be included in MBMS NEIGHBOURING CELL P-T-M INFORMATION.
Summary of change:	⌘	Propose following changes for MBMS signallings. - Change MBMS preferred frequency information to MBMS preferred service id in MBMS MODIFICATION REQUEST - Add descriptions to indicate only selective combinable RB information lists shall be included in MBMS NEIGHBOURING CELL P-T-M INFORMATION.
Consequences if not approved:	⌘	Not optimized MBMS signallings remain.

Clauses affected:	⌘	

		Y	N			
Other specs affected:	⌘		X	Other core specifications	⌘	TS25.423 (CR1081)
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

10.2.16i MBMS MODIFICATION REQUEST

The UE transmits this message to request UTRAN to take certain actions to improve the UE's ability to receive ~~it's~~ its (prioritised) activated MBMS services and/ or sessions.

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
MBMS preferred frequency request	OP		~~Frequency info 10.3.6.36~~ MBMS service identity 10.3.9a.8	The MBMS preferred frequency the UE would like to be moved to. The MBMS preferred frequency is identified by the identity of the MBMS service the UE would like to receive.	REL-6
MBMS RB list requested to be released	OP	1 to <maxRB>		RBs of lower priority MBMS services inhibiting reception of a higher priority service	REL-6
>RB information to release	MP		RB information to release 10.3.4.19		REL-6

<Cut until the next modification>

10.2.16k MBMS NEIGHBOURING CELL P-T-M RB INFORMATION

This message is transmitted periodically by UTRAN to inform UEs about the p-t-m RB configuration used to in neighbouring cells, indicating the UE may perform selection and/ or soft combining. The message contents does not change within a modification period.

Logical channel: MCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message type	MP		Message Type		REL-6
Neighbouring cell identity	MP		Integer (1..X)	Assumption is to use a short index eg. pointer to SIB 11/ 12	REL-6
Neighbouring cell's S-CCPCH list	MP	1 to <maxSCCPCH>			REL-6
>Secondary CCPCH info	MP		MBMS Common PhyCh identity 10.3.9a.2	S-CCPCH configuration used in neighbouring cell. Refers to a configuration in the common RB info	REL-6
>Rake combinable group id	OP		Integer (0..15)	The IE should only be used in case of FDD. Indicates a group of cells for which Rake combining may be performed	REL-6
>L1 combining	OP			L2- combining applies if the IE is absent	REL-6
>>CHOICE *mode*	MP				REL-6
>>>FDD					REL-6
>>>>Type of L1-combining	MP		Enumerated (Rake, Soft)	In case the IE is set to 'Rake', the current and the neighbouring cell are in the same S-CCPCH cluster, as defined in [29]. Each combining method has different transmission time difference requirements, as specified in [19, 20]	REL-6
>>>>MBMS transmission time difference	CV-Soft		Integer (0..3)	Indicates the time difference between the TTIs on the current and the neighbouring cell's SCCPCH that can be L1-combined	REL-6
>>>>MBMS L1 combining schedule	OP		MBMS L1 combining schedule 10.3.9a.7	If included partial layer 1 (Soft) combining applies, in which case this IE indicates when L1-combining applies. If the IE is absent, L1 combining applies continously	REL-6
>>>TDD				(no data)	REL-6
>CHOICE L23 configuration	MP				REL-6
>>SameAs Current cell				Apart from the physical channel configuration and the MSCH configuration information, the same configuration as for the indicated S-CCPCH used in the current cell applies	REL-6
>>>Current cell's S-CCPCH	MP		MBMS Current cell S-CCPCH identity 10.3.9a.5	Reference to the S-CCPCH in the current cell with which applies exaclty the same configuration	REL-6
>>>MSCH configuration information	MP		MSCH configuration information 10.3.9a.16		REL-6
>>Different					REL-6
>>>TrCh information for common for all TrCh	MP		MBMS Common CCTrCh identity	Refers to a (TFCS) configuration in the common RB info	REL-6

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.9a.1		
>>>TrCH information list	MP	1 to <maxFACHPCH>			REL-6
>>>>TrCh information	MP		MBMS Common TrCh identity 10.3.9a.4	Refers to a (TFS) configuration in the common RB info	REL-6
>>>>TrCh combining status	MP		BOOLEAN	Value TRUE means that TrCh combining is used for this transport channel (TDD only). Note 2.	REL-6
>>>>RB information list	OP	1 to <maxRBperTrCh>		The IE is only present for the radio bearers for which selection (FDD) or transport channel (TDD) combining applies. ~~absent if (temporarily) no RBs corresponding with services provided in the current cell are mapped to this TrCh or if the TrCH only carries MCCH and/ or MSCH~~	REL-6
>>>>>RB information	MP		MBMS p-t-m RB information 10.3.9a.7a		REL-6
>>>>MSCH configuration information	OP		MSCH configuration information 10.3.9a.16	Included if the TrCH carries MSCH	

NOTE 1: The signalling supports the option that UTRAN maps one service to L1 combining slots for some neighbours and to the L2 combining slots for other neighbours ie. the use of different combining schemes for different neighbours

NOTE 2: Transport combining can only be indicated when the complete L2 configuration is provided for the neighbouring cell (i.e. using L2 configuration choice “different”). Fortunately, a scenario in which the neighbouring cell configuration is different from the current cell is regarded as the typical scenario for using transport combining.

Condition	Explanation
Soft	This IE is mandatory present if the IE "Type of L1-combining" is included and set to ‘soft’ and not needed otherwise.

<Cut until the next modification>

8.7.6 MBMS modification request

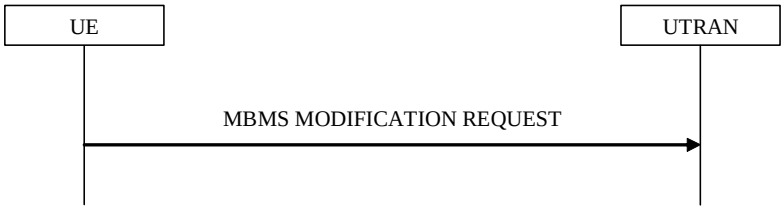

Figure 8.7.6-1: MBMS modification request, normal

8.7.6.1 General

The MBMS modification request procedure is used by the UE to request UTRAN to release the p-t-p radio bearers ofone or more MBMS services the UE is receiving. The procedure may also be used to request to be moved to a preferred frequency applicable for one or more (prioritised) MBMS services, the UE has joined. The procedure applies to all UEs supporting MBMS, that are in state CELL_DCH.

8.7.6.2 Initiation

The UE shall initiate the MBMS modification request procedure in the following cases:

1> the preferred frequency applicable for the highest priority MBMS service is different from the currently used frequency;

1> upper layers request to discontinue reception of an MBMS service provided via a p-t-p radio bearer e.g. because this inhibits reception of a higher priority service.

NOTE: The above case may occor upon receiving a dedicated notification or in other cases eg. a change of transfer mode from p-t-p to p-t-m for the UE's higest priority MBMS service.

The UE shall set the contents of the MBMS MODIFICATION REQUEST message as follows:

1> if the preferred frequency applicable for the highest priority MBMS service is different from the currently used frequency:

2> include the IE "MBMS preferred frequency request" and set it to the ~~applicable preferred frequency~~ highest priority MBMS service identity;

1> if upper layers request to discontinue reception of an MBMS service provided via a p-t-p radio bearer:

2> include the p-t-p radio bearers used for the corresponding MBMS services within the IE "MBMS RB list requested to be released".

<Cut until the next modification>

```
-- **************************************************
--
-- MBMS MODIFICATION REQUEST
--
-- **************************************************

MBMSModificationRequest ::= SEQUENCE {
    -- MBMS Modification Request IEs
        mbms-PreferredFreqRequest       MBMS-PreferredFreqRequest-r6MBMS-ServiceIdentity
    OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}
```