TSG-RAN Meeting #12 *RP-010312*
Stockholm, Sweden, 12 - 15 June 2001

Title: **Agreed CRs (Release '99 and Rel-4 category A) to TS 25.331 (2)**

Source: **TSG-RAN WG2**

Agenda item: **8.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-011244	agreed	25.331	755	1	R99	Compressed mode corrections	F	3.6.0	3.7.0
R2-011245	agreed	25.331	756		Rel-4	Compressed mode corrections	A	4.0.0	4.1.0
R2-011246	agreed	25.331	757	1	R99	Correction concerning inter-RAT procedures	F	3.6.0	3.7.0
R2-011247	agreed	25.331	758		Rel-4	Correction concerning inter-RAT procedures	A	4.0.0	4.1.0
R2-011248	agreed	25.331	761	1	R99	Measurement corrections	F	3.6.0	3.7.0
R2-011249	agreed	25.331	762		Rel-4	Measurement corrections	A	4.0.0	4.1.0
R2-011071	agreed	25.331	763		R99	RLC Tr Discard	F	3.6.0	3.7.0
R2-011356	agreed	25.331	764		Rel-4	RLC Tr Discard	A	4.0.0	4.1.0
R2-011252	agreed	25.331	765	1	R99	Annex B CPCH Correction	F	3.6.0	3.7.0
R2-011253	agreed	25.331	766		Rel-4	Annex B CPCH Correction	A	4.0.0	4.1.0
R2-011254	agreed	25.331	767	1	R99	SIB Correction for CSICH Power Offset	F	3.6.0	3.7.0
R2-011255	agreed	25.331	768		Rel-4	SIB Correction for CSICH Power Offset	A	4.0.0	4.1.0
R2-011430	agreed	25.331	769	1	R99	Transfer of Last known position in case of SRNS relocation	F	3.6.0	3.7.0
R2-011431	agreed	25.331	770		Rel-4	Transfer of Last known position in case of SRNS relocation	A	4.0.0	4.1.0
R2-011433	agreed	25.331	771	1	R99	Corrections to UE Positioning measurements	F	3.6.0	3.7.0
R2-011434	agreed	25.331	772		Rel-4	Corrections to UE Positioning measurements	A	4.0.0	4.1.0
R2-011256	agreed	25.331	778	1	R99	GSM measurements in compressed mode	F	3.6.0	3.7.0
R2-011257	agreed	25.331	779		Rel-4	GSM measurements in compressed mode	A	4.0.0	4.1.0
R2-011435	agreed	25.331	780	2	R99	Correction of Activation Time in Inter-Rat HO Commands	F	3.6.0	3.7.0
R2-011436	agreed	25.331	781		Rel-4	Correction of Activation Time in Inter-Rat HO Commands	A	4.0.0	4.1.0

3GPP TSG-RAN WG2 Meeting #21
Busan, Korea, May 21th-25th 2001

Tdoc R2-011244

CR-Form-v3

CHANGE REQUEST

⌘ **25.331 CR 755** ⌘ rev **r1** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Compressed mode corrections			
Source:	⌘	TSG-RAN WG2			
Work item code:	⌘	TEI	***Date:***	⌘	2001-05-24
Category:	⌘	**F**	***Release:***	⌘	R99

Use one of the following categories:	*Use one of the following releases:*	
F *(essential correction)*	*2*	*(GSM Phase 2)*
A *(corresponds to a correction in an earlier release)*	*R96*	*(Release 1996)*
B *(Addition of feature),*	*R97*	*(Release 1997)*
C *(Functional modification of feature)*	*R98*	*(Release 1998)*
D *(Editorial modification)*	*R99*	*(Release 1999)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.	*REL-4*	*(Release 4)*
	REL-5	*(Release 5)*

Reason for change: ⌘

1. It is not clear if the case when a compressed mode pattern for UL only and another pattern for DL only create gaps in the same frame is regarded as an illegal overlap or not.

2. According to Tabular, it is possible to in IE DPCH Compressed Mode Info to indicate that the gap pattern shall be used in 'UL only', 'DL only', or 'both UL and DL'. According to ASN.1, it is not possible to indicate 'both UL and DL'.

   From the UE Measurement Capabilities, it is evident both for UE and UTRAN in which cases UE requires compressed mode in UL and/or DL. But using the current ASN.1, it is not possible to signal and use different compressed mode methods (puncturing, SF/2, higher layer scheduling) in UL and DL. Instead, this would mean that the compressed mode method would be restricted to be the same in UL and DL.

3. Consistency checks, such that the UL/DL mode of the gap pattern sequence is set in accordance with the UE Measurement Capabilities etc, are missing.
   Only one pattern sequence per measurement purpose may be active at the same time (ref TS25.215).

4. At timing re-initialised hard handover, where UE shall read the SFN from the BCH of the target cell, there will be an interruption in the CFN counting. This affects active transmission gap sequence patterns. A possible solution would be to regard the frames between the last frame on old RL and the first frame on new RL to be 'jumped-over', and the gap pattern sequence would continue as if the 'jumped over' frames has really been transmitted/received (which in fact, they have not). Note that a description of this behaviour is currently missing.

   However, there is a potential risk that UE and UTRAN have a different understanding on the exact frame timing. In such case there is no possibility to unambiguously define a solution where both UE and UTRAN would have the same understanding of the amount of frames that have been 'jumped-over'.

5. Relation between UL compressed mode method “higher layer scheduling” and TFC selection is not obvious.

6. UE behaviour at overlapping compressed mode gap and PDSCH reception not specified.

Summary of change: ⌘

1. Clarified that an illegal overlap is created if two or more transmission gap pattern sequences create transmission gaps in the same frame, irrespective of the gaps are created in uplink or downlink.

2. ASN.1 (and Tabular) is modified to include combined UL and DL compressed mode. Backwards compatibility analysis: The CR is not backward compatible for UE´s and Networks that supports the Compressed mode functionality.

3. Consistency checks are added.

4. At timing re-initialised hard handover, all active transmission gap pattern sequences are stopped. Transmission gap pattern sequences may be activated on the new RL in the same message that triggers the timing re-initialised hard handover.

   Backwards compatibility analysis: Yes.The functionality is reduced. To avoid the problem solved by this CR for UEs not having the CR implemented, UTRAN should signal that all active transmission gap pattern sequences are deactivated at the hard handover.

5. Reference to TS 25.221 added, to clarify that UL compressed mode method “higher layer scheduling” has impacts on TFC selection.

6. Clarified that UE shall perform the measurments according to the compressed mode pattern, in case PDSCH is sceduled simultaneously as a compressed mode gap.

7. Editorial: UE variable COMPRESSED_MODE_ERROR is currently not used in a way that motivates its presence in the specification. The variable is deleted.

8. The IE “TGPS reconfiguration CFN” in section 10.3.6.34 is missing in ASN.1. This is added.

   Backwards compatibility analysis: This correction does not support backwards compatibility for UE´s and Networks that supports the Compressed mode functionality.

Consequences if not approved: ⌘

1. Unspecified error behaviour means inter-operability problems.

2. Not possible to use different CM methods in UL and DL.

3. Unspecified error behaviour means inter-operability problems.

4. Risk of dropped connection due to different assumptions in UE and UTRAN on transmission gap pattern occurences.

5. Not clear from specifications what UL compressed mode method “higher layer scheduling” means.

6. UE behaviour not specified.

7. -

Clauses affected:	⌘	8.2.11.2, 8.2.11.x (new), 8.4.1.3, 8.6.6.15, 10.3.6.33, 11, 13.4.2
Other specs	⌘ ☐ Other core specifications	⌘

affected:	☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.2.11.2 Runtime error due to overlapping compressed mode configurations

When the UE has received from the UTRAN the configurations of several compressed mode transmission gap pattern sequences, and if several of these patterns are to be simultaneously active, the UE shall check to see if these simultaneously active transmission gap pattern sequences create transmission gaps in the same frame. An illegal overlap is created if two or more transmission gap pattern sequences create transmission gaps in the same frame, irrespective of the gaps are created in uplink or downlink. The UE shall:

- iIf the parallel transmission gap pattern sequences create no an illegal overlap, the UE shall:
  - set the variable COMPRESSED_MODE_ERROR to FALSE;
  - otherwise:
  - set the variable COMPRESSED_MODE_ERROR to TRUE;
- delete the overlapping transmission gap pattern sequence configuration stored in the variable TGPS_IDENTITY, which is associated with the highest value of IE "TGPSI";(Changed indentation)
- transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the information elements as specified below:(Changed indentation)
  - not include the IE "RRC transaction identifier";(Changed indentation)
  - set the cause value in IE "failure cause" to value "compressed mode runtime error";(Changed indentation)
- terminate the inter-frequency and/or inter-RAT measurements corresponding to the deleted transmission gap pattern sequence;(Changed indentation)
- when the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been submitted to lower layers for transmission:(Changed indentation)
  - The procedure ends.(Changed indentation)

8.2.11.x Runtime error due to overlapping compressed mode configuration and PDSCH reception

If UE is scheduled to receive a PDSCH frame at the same time instant as a compressed mode gap, UE shall perform the measurements according to the measurement purpose of the pattern sequence.

8.4.1.3 Reception of MEASUREMENT CONTROL by the UE

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in subclause 8.6 unless otherwise specified below.

The UE shall:

- read the IE "Measurement command";
- if the IE "measurement command" has the value "setup":
  - store this measurement in the variable MEASUREMENT_IDENTITY according to the IE "measurement identity";
  - for measurement types "inter-RAT measurement" or "inter-frequency measurement":
    - if, according to its measurement capabilities, the UE requires compressed mode to perform the measurements and a compressed mode pattern sequence with an appropriate measurement purpose is simultaneously activated by the IE "DPCH compressed mode status info"; or
    - if, according to its measurement capabilities, the UE does not require compressed mode to perform the measurements:
      - begin measurements according to the stored control information for this measurement identity;
  - for any other measurement type:
    - begin measurements according to the stored control information for this measurement identity.
  - if the IE "Measurement command" has the value "modify":
    - for all measurement control present in the MEASUREMENT CONTROL message:
      - replace the corresponding information stored in variable MEASUREMENT_IDENTITY associated to the identity indicated by the IE "measurement identity";
    - resume the measurements according to the new stored measurement control information.
- if the IE "measurement command" has the value "release":
  - terminate the measurement associated with the identity given in the IE "measurement identity";
  - clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY.
- if the IE "DPCH Compressed Mode Status Info" is present, the UE shall:
  - if, as the result of this message, UE will have more than one transmission gap pattern sequence with the same measurement purpose active (according to IE 'TGMP', (according to IE 'TGMP' in variable TGPS_IDENTITY), UE shall set the variable CONFIGURATION_INCOMPLETE to TRUE.
  - if pattern sequence corresponding to IE "TGPSI" is already active (according to "TGPS Status Flag"):
    - deactivate this pattern sequence at the beginning of the frame indicated by IE "TGPS reconfiguration CFN" received in the message;
  - after the time indicated by IE "TGPS reconfiguration CFN" has elapsed:
    - activate the pattern sequence stored in the variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "active" at the time indicated by IE "TGCFN"; and
    - begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
    - if the values of IE "TGPS reconfiguration CFN" and IE "TGCFN" are equal:
      - start the concerned pattern sequence immediately at that CFN;

- not alter pattern sequences stored in variable TGPS_IDENTITY, but not identitifed in IE "TGPSI"
- clear the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS;
- And the procedure ends.

8.6.6.15 DPCH Compressed mode info

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is included, the UE shall for each transmission gap pattern sequence perform the following consistency checks:

- If UE, according to its measurement capabilities, and for the measurement purpose indicated by IE 'TGMP', requires UL compressed mode for measurements on any of the cells to be measured according to UE variable CELL_INFO_LIST, and CHOICE 'UL/DL mode' indicates 'DL only', UE shall set the variable INVALID_CONFIGURATION to TRUE.

- If UE, according to its measurement capabilities, and for the measurement purpose indicated by IE 'TGMP', requires DL compressed mode for measurements on any of the cells to be measured according to UE variable CELL_INFO_LIST, and CHOICE 'UL/DL mode' indicates 'UL only', UE shall set the variable INVALID_CONFIGURATION to TRUE.

- If UE already has an active transmission gap pattern sequence that, according to IE 'TGMP', has the same measurement purpose, and both patterns will be active after the new configuration has been taken into use, UE shall set the variable INVALID_CONFIGURATION to TRUE.

If variable INVALID_CONFIGURATION has value FALSE after UE has performed the checks above, the UE shall:

- if pattern sequence corresponding to IE "TGPSI" is already active (according to "TGPS Status Flag"):
  - deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time"(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use;
- update each pattern sequence to the variable TGPS_IDENTITY according to the IE "TGPSI";
- update into the variable TGPS_IDENTITY the configuration information defined by IE group" transmission gap pattern sequence configuration parameters ";
- after the new configuration has been taken into use:
  - activate the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" at the time indicated by IE "TGCFN"; and
  - begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
  - if the new configuration is taken into use at the same CFN as indicated by IE "TGCFN":
    - start the concerned pattern sequence immediately at that CFN;
- monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified in subclause 8.2.11.2;

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is not included, the UE shall:

- if pattern sequence corresponding to IE "TGPSI" is already active (according to "TGPS Status Flag"):
  - deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time"(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use;
- after the new configuration has been taken into use:
  - activate, at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate"; and
  - begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;

- if the new configuration is taken into use at the same CFN as indicated by IE "TGCFN":
  - start the concerned pattern sequence immediately at that CFN;

For transmission gap Ppattern sequences stored in variable TGPS_IDENTITY, but not identified in IE "TGPSI", UE shall act as follows~~not be affected.~~:

- If the received message implies a timing re-initialised hard handover (see 8.3.5.1), UE shall deactivate such transmission gap pattern sequences at the beginning of the frame, indicated by IE "Activation time" (see subclause 8.6.3.1) received in this message, and set IE "TGPS Status Flag" in corresponding UE variable TGPS_IDENTITY to 'inactive'.
- If the received message not implies a timing re-initialised hard handover (see 8.3.5.1), UE shall continue such transmission gap pattern sequence according to IE "TGPS Status Flag" in corresponding UE variable TGPS_IDENTITY.

Uplink and downlink compressed mode methods are described in [27]. For UL compressed mode method "higher layer scheduling" and transport format combination selection, see [15].

10.3.6.33 DPCH compressed mode info

NOTE: Only for FDD.

This information element indicates the parameters of the compressed mode to be used by the UE in order to perform inter-frequency and inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence		1 to <maxTGPS>		
>TGPSI	MP		TGPSI 10.3.6.82	
>TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be activated or deactivated.
>TGCFN	CV Active		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.
>Transmission gap pattern sequence configuration parameters	OP			
>>TGMP	MP		Enumerated(TDD measurement, FDD measurement, GSM carrier RSSI measurement, GSM Initial BSIC identification, GSM BSIC re-confirmation)	Transmission Gap pattern sequence Measurement Purpose.
>>TGPRC	MP		Integer (1..511, Infinity)	The number of transmission gap patterns within the Transmission Gap Pattern Sequence.
>>TGSN	MP		Integer (0..14)	Transmission Gap Starting Slot Number The slot number of the first transmission gap slot within the TGCFN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>TGL1	MP		Integer(1..14)	The length of the first Transmission Gap within the transmission gap pattern expressed in number of slots
>>TGL2	MD		Integer (1..14)	The length of the second Transmission Gap within the transmission gap pattern. If omitted, then TGL2=TGL1.
>>TGD	MP		Integer(15..269, undefined)	Transmission gap distance indicates the number of slots between starting slots of two consecutive transmission gaps within a transmission gap pattern. If there is only one transmission gap in the transmission gap pattern, this parameter shall be set to zero.
>>TGPL1	MP		Integer (1..144)	The duration of transmission gap pattern 1.
>>TGPL2	MD		Integer (1..144)	The duration of transmission gap pattern 2. If omitted, then TGPL2=TGPL1.
>>RPP	MP		Enumerated (mode 0, mode 1).	Recovery Period Power control mode during the frame after the transmission gap within the compressed frame. Indicates whether normal PC mode or compressed PC mode is applied
>>ITP	MP		Enumerated (mode 0, mode 1).	Initial Transmit Power is the uplink power control method to be used to compute the initial transmit power after the compressed mode gap.
>> CHOICE *UL/DL mode*	MP		~~Enumerated (UL only, DL only, UL/DL)~~	~~Defines whether only DL, only UL, or combined UL/DL compressed mode is used.~~
>>>DL only				Compressed mode used in DL only
>>>>Downlink compressed mode method	~~CV DL~~MP		Enumerated (puncturing, SF/2, higher layer scheduling)	Method for generating downlink compressed mode gap
>>>UL only				Compressed mode used in UL only
>>>>Uplink compressed mode method	~~CV UL~~MP		Enumerated (SF/2, higher layer scheduling)	Method for generating uplink compressed mode gap
>>>UL and DL				Compressed mode used in UL and DL
>>>>Downlink compressed mode method	MP		Enumerated (puncturing, SF/2, higher layer scheduling)	Method for generating downlink compressed mode gap
>>>>Uplink compressed mode method	MP		Enumerated (SF/2, higher layer scheduling)	Method for generating uplink compressed mode gap
>>Downlink frame type	MP		Enumerated (A, B)	
>>DeltaSIR1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				frame containing the start of the first transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase)
>>DeltaSIRafter1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the first transmission gap in the transmission gap pattern.
>>DeltaSIR2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the second transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase) When omitted, DeltaSIR2 = DeltaSIR1.
>>DeltaSIRafter2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the second transmission gap in the transmission gap pattern. When omitted, DeltaSIRafter2 = DeltaSIRafter1.
>>N Identify abort	CV Initial BSIC		Integer(1..128)	Indicates the maximum number of repeats of patterns that the UE shall use to attempt to decode the unknown BSIC of the GSM cell in the initial BSIC identification procedure
>>T Reconfirm abort	CV Re-confirm BSIC		Integer(1..20)	Indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure. The time is given in steps of 0.5 seconds.

Condition	Explanation
UL	This information element is only sent when the value of the "UL/DL mode" IE is "UL only" or "UL/DL".
DL	This information element is only sent when the value of the "UL/DL mode" IE is "DL only" or "UL/DL".
Active	This information element is only sent when the value of the "TGPS Status Flag" IE is "Active".
Initial BSIC	This information element is only sent when the value of the IE "TGMP" is set to "GSM Initial BSIC identification".
Re-confirm BSIC	This information element is only sent when the value of the IE "TGMP" is set to "GSM BSIC re-confirmation".

10.3.6.34 DPCH Compressed Mode Status Info

This information element indicates status information of the compressed mode used by the UE in order to perform inter-frequency and inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPS reconfiguration CFN	MP		Integer (0..255)	Connection Frame Number of the frame where already active Transmission Gap Pattern Sequences shall be deactivated
Transmission gap pattern sequence		1 to <maxTGPS>		
>TGPSI	MP		TGPSI 10.3.6.82	Transmission Gap Pattern Sequence Identifier
>TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be active or inactive.
>TGCFN	CV Active		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.

Condition	Explanation
Active	This information element is only sent when the value of the "TGPS Status Flag" IE is "Active".

11.3 Information element definitions

```
   :

DPCH-CompressedModeInfo ::=         SEQUENCE {
    tgp-SequenceList                    TGP-SequenceList
}

DPCH-CompressedModeStatusInfo ::=   SEQUENCE {
    tgps-Reconfiguration-CFN            TGPS-Reconfiguration-CFN
    tgp-SequenceShortList               SEQUENCE (SIZE (1..maxTGPS)) OF
                                            TGP-SequenceShort
}

TGPS-Reconfiguration-CFN        INTEGER (0..255)

TGP-SequenceList ::=                SEQUENCE (SIZE (1..maxTGPS)) OF
                                        TGP-Sequence

TGP-Sequence ::=                    SEQUENCE {
    tgpsi                               TGPSI,
    tgps-Status                         CHOICE {
        activate                            SEQUENCE {
            tgcfn                               TGCFN
        },
        deactivate                          NULL
    },
    tgps-ConfigurationParams            TGPS-ConfigurationParams            OPTIONAL
}

TGPS-ConfigurationParams ::=        SEQUENCE {
    tgmp                                TGMP,
    tgprc                               TGPRC,
    tgsn                                TGSN,
    tgl1                                TGL,
    tgl2                                TGL                                 OPTIONAL,
    tgd                                 TGD,
    tgpl1                               TGPL,
    tgpl2                               TGPL                                OPTIONAL,
    rpp                                 RPP,
    itp                                 ITP,
    ul-DL-Mode                          UL-DL-Mode,
    -- TABULAR: Compressed mode method is nested inside UL-DL-Mode
    dl-FrameType                        DL-FrameType,
    deltaSIR1                           DeltaSIR,
    deltaSIRAfter1                      DeltaSIR,
    deltaSIR2                           DeltaSIR                            OPTIONAL,
    deltaSIRAfter2                      DeltaSIR                            OPTIONAL,
    nidentifyAbort                      NidentifyAbort                      OPTIONAL,
    treconfirmAbort                     TreconfirmAbort                     OPTIONAL
}

UL-DL-Mode ::=                      CHOICE {
    ul                                  UL-CompressedModeMethod,
    dl                                  DL-CompressedModeMethod,
    ul-and-dl                               SEQUENCE {
        ul                                      UL-CompressedModeMethod,
        dl                                      DL-CompressedModeMethod
    }
}

UL-CompressedModeMethod ::=         ENUMERATED {
                                        sf-2,
                                        higherLayerScheduling }

DL-CompressedModeMethod ::=         ENUMERATED {
                                        puncturing, sf-2,
                                        higherLayerScheduling }
```

13.4.2 VoidCOMPRESSED_MODE_ERROR

This variable contains information on whether the received compressed mode configuration from the UTRAN has resulted in an illegal overlap causing a runtime error.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
COMPRESSED_MODE_ERROR	MP		Boolean	

3GPP TSG-RAN WG2 Meeting #21
Busan, Korea, May 21th-25th 2001

Tdoc R2-011245

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **756** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Compressed mode corrections			
Source:	⌘	TSG-RAN WG2			
Work item code:	⌘	TEI	***Date:***	⌘	2001-05-24
Category:	⌘	**A**	***Release:***	⌘	REL-4

Use one of the following categories:
F *(essential 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)*

Reason for change: ⌘

1. It is not clear if the case when a compressed mode pattern for UL only and another pattern for DL only create gaps in the same frame is regarded as an illegal overlap or not.

2. According to Tabular, it is possible to in IE DPCH Compressed Mode Info to indicate that the gap pattern shall be used in 'UL only', 'DL only', or 'both UL and DL'. According to ASN.1, it is not possible to indicate 'both UL and DL'.

   From the UE Measurement Capabilities, it is evident both for UE and UTRAN in which cases UE requires compressed mode in UL and/or DL. But using the current ASN.1, it is not possible to signal and use different compressed mode methods (puncturing, SF/2, higher layer scheduling) in UL and DL. Instead, this would mean that the compressed mode method would be restricted to be the same in UL and DL.

3. Consistency checks, such that the UL/DL mode of the gap pattern sequence is set in accordance with the UE Measurement Capabilities etc, are missing.
   Only one pattern sequence per measurement purpose may be active at the same time (ref TS25.215).

4. At timing re-initialised hard handover, where UE shall read the SFN from the BCH of the target cell, there will be an interruption in the CFN counting. This affects active transmission gap sequence patterns. A possible solution would be to regard the frames between the last frame on old RL and the first frame on new RL to be 'jumped-over', and the gap pattern sequence would continue as if the 'jumped over' frames has really been transmitted/received (which in fact, they have not). Note that a description of this behaviour is currently missing.

   However, there is a potential risk that UE and UTRAN have a different understanding on the exact frame timing. In such case there is no possibility to unambiguously define a solution where both UE and UTRAN would have the same understanding of the amount of frames that have been 'jumped-over'.

	5. Relation between UL compressed mode method “higher layer scheduling” and TFC selection is not obvious. 6. UE behaviour at overlapping compressed mode gap and PDSCH reception not specified.
Summary of change: ⌘	1. Clarified that an illegal overlap is created if two or more transmission gap pattern sequences create transmission gaps in the same frame, irrespective of the gaps are created in uplink or downlink. 2. ASN.1 (and Tabular) is modified to include combined UL and DL compressed mode. Backwards compatibility analysis: The CR is not backward compatible for UE´s and Networks that supports the Compressed mode functionality. 3. Consistency checks are added. 4. At timing re-initialised hard handover, all active transmission gap pattern sequences are stopped. Transmission gap pattern sequences may be activated on the new RL in the same message that triggers the timing re-initialised hard handover. Backwards compatibility analysis: Yes.The functionality is reduced. To avoid the problem solved by this CR for UEs not having the CR implemented, UTRAN should signal that all active transmission gap pattern sequences are deactivated at the hard handover. 5. Reference to TS 25.221 added, to clarify that UL compressed mode method “higher layer scheduling” has impacts on TFC selection. 6. Clarified that UE shall perform the measurments according to the compressed mode pattern, in case PDSCH is sceduled simultaneously as a compressed mode gap. 7. Editorial: UE variable COMPRESSED_MODE_ERROR is currently not used in a way that motivates its presence in the specification. The variable is deleted. Backwards compatibility analysis: This correction does not support backwards compatibility for UE´s and Networks that supports the Compressed mode functionality.
Consequences if not approved: ⌘	1. Unspecified error behaviour means inter-operability problems. 2. Not possible to use different CM methods in UL and DL. 3. Unspecified error behaviour means inter-operability problems. 4. Risk of dropped connection due to different assumptions in UE and UTRAN on transmission gap pattern occurences. 5. Not clear from specifications what UL compressed mode method “higher layer scheduling” means. 6. UE behaviour not specified. 7. -

Clauses affected:	⌘	8.2.11.2, 8.2.11.x (new), 8.4.1.3, 8.6.6.15, 10.3.6.33, 11, 13.4.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ 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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.2.11.2 Runtime error due to overlapping compressed mode configurations

When the UE has received from the UTRAN the configurations of several compressed mode transmission gap pattern sequences, and if several of these patterns are to be simultaneously active, the UE shall check to see if these simultaneously active transmission gap pattern sequences create transmission gaps in the same frame. An illegal overlap is created if two or more transmission gap pattern sequences create transmission gaps in the same frame, irrespective of the gaps are created in uplink or downlink. The UE shall:

- iIf the parallel transmission gap pattern sequences create no an illegal overlap, the UE shall:
  - set the variable COMPRESSED_MODE_ERROR to FALSE;
  - otherwise:
  - set the variable COMPRESSED_MODE_ERROR to TRUE;
- delete the overlapping transmission gap pattern sequence configuration stored in the variable TGPS_IDENTITY, which is associated with the highest value of IE "TGPSI";(Changed indentation)
- transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the information elements as specified below:(Changed indentation)
  - not include the IE "RRC transaction identifier";(Changed indentation)
  - set the cause value in IE "failure cause" to value "compressed mode runtime error";(Changed indentation)
- terminate the inter-frequency and/or inter-RAT measurements corresponding to the deleted transmission gap pattern sequence;(Changed indentation)
- when the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been submitted to lower layers for transmission:(Changed indentation)
  - The procedure ends.(Changed indentation)

8.2.11.x Runtime error due to overlapping compressed mode configuration and PDSCH reception

If UE is scheduled to receive a PDSCH frame at the same time instant as a compressed mode gap, UE shall perform the measurements according to the measurement purpose of the pattern sequence.

8.4.1.3 Reception of MEASUREMENT CONTROL by the UE

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in subclause 8.6 unless otherwise specified below.

The UE shall:

- read the IE "Measurement command";
- if the IE "measurement command" has the value "setup":
  - store this measurement in the variable MEASUREMENT_IDENTITY according to the IE "measurement identity";
  - for measurement types "inter-RAT measurement" or "inter-frequency measurement":
    - if, according to its measurement capabilities, the UE requires compressed mode to perform the measurements and a compressed mode pattern sequence with an appropriate measurement purpose is simultaneously activated by the IE "DPCH compressed mode status info"; or
    - if, according to its measurement capabilities, the UE does not require compressed mode to perform the measurements:
      - begin measurements according to the stored control information for this measurement identity;
  - for any other measurement type:
    - begin measurements according to the stored control information for this measurement identity.
  - if the IE "Measurement command" has the value "modify":
    - for all measurement control present in the MEASUREMENT CONTROL message:
      - replace the corresponding information stored in variable MEASUREMENT_IDENTITY associated to the identity indicated by the IE "measurement identity";
    - resume the measurements according to the new stored measurement control information.
- if the IE "measurement command" has the value "release":
  - terminate the measurement associated with the identity given in the IE "measurement identity";
  - clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY.
- if the IE "DPCH Compressed Mode Status Info" is present, the UE shall:
  - if, as the result of this message, UE will have more than one transmission gap pattern sequence with the same measurement purpose active (according to IE 'TGMP', (according to IE 'TGMP' in variable TGPS_IDENTITY), UE shall set the variable CONFIGURATION_INCOMPLETE to TRUE.
  - if pattern sequence corresponding to IE "TGPSI" is already active (according to "TGPS Status Flag"):
    - deactivate this pattern sequence at the beginning of the frame indicated by IE "TGPS reconfiguration CFN" received in the message;
  - after the time indicated by IE "TGPS reconfiguration CFN" has elapsed:
    - activate the pattern sequence stored in the variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "active" at the time indicated by IE "TGCFN"; and
    - begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
    - if the values of IE "TGPS reconfiguration CFN" and IE "TGCFN" are equal:
      - start the concerned pattern sequence immediately at that CFN;

- not alter pattern sequences stored in variable TGPS_IDENTITY, but not identitifed in IE "TGPSI"
- clear the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS;
- And the procedure ends.

8.6.6.15 DPCH Compressed mode info

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is included, the UE shall for each transmission gap pattern sequence perform the following consistency checks:

- If UE, according to its measurement capabilities, and for the measurement purpose indicated by IE 'TGMP', requires UL compressed mode for measurements on any of the cells to be measured according to UE variable CELL_INFO_LIST, and CHOICE 'UL/DL mode' indicates 'DL only', UE shall set the variable INVALID_CONFIGURATION to TRUE.

- If UE, according to its measurement capabilities, and for the measurement purpose indicated by IE 'TGMP', requires DL compressed mode for measurements on any of the cells to be measured according to UE variable CELL_INFO_LIST, and CHOICE 'UL/DL mode' indicates 'UL only', UE shall set the variable INVALID_CONFIGURATION to TRUE.

- If UE already has an active transmission gap pattern sequence that, according to IE 'TGMP', has the same measurement purpose, and both patterns will be active after the new configuration has been taken into use, UE shall set the variable INVALID_CONFIGURATION to TRUE.

If variable INVALID_CONFIGURATION has value FALSE after UE has performed the checks above, the UE shall:

- if pattern sequence corresponding to IE "TGPSI" is already active (according to "TGPS Status Flag"):
  - deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time"(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use;
- update each pattern sequence to the variable TGPS_IDENTITY according to the IE "TGPSI";
- update into the variable TGPS_IDENTITY the configuration information defined by IE group" transmission gap pattern sequence configuration parameters ";
- after the new configuration has been taken into use:
  - activate the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" at the time indicated by IE "TGCFN"; and
  - begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
  - if the new configuration is taken into use at the same CFN as indicated by IE "TGCFN":
    - start the concerned pattern sequence immediately at that CFN;
- monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified in subclause 8.2.11.2;

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is not included, the UE shall:

- if pattern sequence corresponding to IE "TGPSI" is already active (according to "TGPS Status Flag"):
  - deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time"(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use;
- after the new configuration has been taken into use:
  - activate, at the time indicated by IE "TGCFN", the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate"; and
  - begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;

- if the new configuration is taken into use at the same CFN as indicated by IE "TGCFN":
  - start the concerned pattern sequence immediately at that CFN;

For transmission gap Ppattern sequences stored in variable TGPS_IDENTITY, but not identified in IE "TGPSI", UE shall act as follows~~not be affected.~~:

- If the received message implies a timing re-initialised hard handover (see 8.3.5.1), UE shall deactivate such transmission gap pattern sequences at the beginning of the frame, indicated by IE "Activation time" (see subclause 8.6.3.1) received in this message, and set IE "TGPS Status Flag" in corresponding UE variable TGPS_IDENTITY to 'inactive'.
- If the received message not implies a timing re-initialised hard handover (see 8.3.5.1), UE shall continue such transmission gap pattern sequence according to IE "TGPS Status Flag" in corresponding UE variable TGPS_IDENTITY.

Uplink and downlink compressed mode methods are described in [27]. For UL compressed mode method "higher layer scheduling" and transport format combination selection, see [15].

10.3.6.33 DPCH compressed mode info

NOTE: Only for FDD.

This information element indicates the parameters of the compressed mode to be used by the UE in order to perform inter-frequency and inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence		1 to <maxTGPS>		
>TGPSI	MP		TGPSI 10.3.6.82	
>TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be activated or deactivated.
>TGCFN	CV Active		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.
>Transmission gap pattern sequence configuration parameters	OP			
>>TGMP	MP		Enumerated(TDD measurement, FDD measurement, GSM carrier RSSI measurement, GSM Initial BSIC identification, GSM BSIC re-confirmation)	Transmission Gap pattern sequence Measurement Purpose.
>>TGPRC	MP		Integer (1..511, Infinity)	The number of transmission gap patterns within the Transmission Gap Pattern Sequence.
>>TGSN	MP		Integer (0..14)	Transmission Gap Starting Slot Number The slot number of the first transmission gap slot within the TGCFN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>TGL1	MP		Integer(1..14)	The length of the first Transmission Gap within the transmission gap pattern expressed in number of slots
>>TGL2	MD		Integer (1..14)	The length of the second Transmission Gap within the transmission gap pattern. If omitted, then TGL2=TGL1.
>>TGD	MP		Integer(15..269, undefined)	Transmission gap distance indicates the number of slots between starting slots of two consecutive transmission gaps within a transmission gap pattern. If there is only one transmission gap in the transmission gap pattern, this parameter shall be set to zero.
>>TGPL1	MP		Integer (1..144)	The duration of transmission gap pattern 1.
>>TGPL2	MD		Integer (1..144)	The duration of transmission gap pattern 2. If omitted, then TGPL2=TGPL1.
>>RPP	MP		Enumerated (mode 0, mode 1).	Recovery Period Power control mode during the frame after the transmission gap within the compressed frame. Indicates whether normal PC mode or compressed PC mode is applied
>>ITP	MP		Enumerated (mode 0, mode 1).	Initial Transmit Power is the uplink power control method to be used to compute the initial transmit power after the compressed mode gap.
>> CHOICE *UL/DL mode*	MP		~~Enumerated (UL only, DL only, UL/DL)~~	~~Defines whether only DL, only UL, or combined UL/DL compressed mode is used.~~
>>>DL only				Compressed mode used in DL only
>>>>Downlink compressed mode method	~~CV DL~~MP		Enumerated (puncturing, SF/2, higher layer scheduling)	Method for generating downlink compressed mode gap
>>>UL only				Compressed mode used in UL only
>>>>Uplink compressed mode method	~~CV UL~~MP		Enumerated (SF/2, higher layer scheduling)	Method for generating uplink compressed mode gap
>>>UL and DL				Compressed mode used in UL and DL
>>>>Downlink compressed mode method	MP		Enumerated (puncturing, SF/2, higher layer scheduling)	Method for generating downlink compressed mode gap
>>>>Uplink compressed mode method	MP		Enumerated (SF/2, higher layer scheduling)	Method for generating uplink compressed mode gap
>>Downlink frame type	MP		Enumerated (A, B)	
>>DeltaSIR1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				frame containing the start of the first transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase)
>>DeltaSIRafter1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the first transmission gap in the transmission gap pattern.
>>DeltaSIR2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the second transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase) When omitted, DeltaSIR2 = DeltaSIR1.
>>DeltaSIRafter2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the second transmission gap in the transmission gap pattern. When omitted, DeltaSIRafter2 = DeltaSIRafter1.
>>N Identify abort	CV Initial BSIC		Integer(1..128)	Indicates the maximum number of repeats of patterns that the UE shall use to attempt to decode the unknown BSIC of the GSM cell in the initial BSIC identification procedure
>>T Reconfirm abort	CV Re-confirm BSIC		Integer(1..20)	Indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure. The time is given in steps of 0.5 seconds.

Condition	Explanation
UL	This information element is only sent when the value of the "UL/DL mode" IE is "UL only" or "UL/DL".
DL	This information element is only sent when the value of the "UL/DL mode" IE is "DL only" or "UL/DL".
Active	This information element is only sent when the value of the "TGPS Status Flag" IE is "Active".
Initial BSIC	This information element is only sent when the value of the IE "TGMP" is set to "GSM Initial BSIC identification".
Re-confirm BSIC	This information element is only sent when the value of the IE "TGMP" is set to "GSM BSIC re-confirmation".

10.3.6.34 DPCH Compressed Mode Status Info

This information element indicates status information of the compressed mode used by the UE in order to perform inter-frequency and inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPS reconfiguration CFN	MP		Integer (0..255)	Connection Frame Number of the frame where already active Transmission Gap Pattern Sequences shall be deactivated
Transmission gap pattern sequence		1 to <maxTGPS>		
>TGPSI	MP		TGPSI 10.3.6.82	Transmission Gap Pattern Sequence Identifier
>TGPS Status Flag	MP		Enumerated(active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence, whether it shall be active or inactive.
>TGCFN	CV Active		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.

Condition	Explanation
Active	This information element is only sent when the value of the "TGPS Status Flag" IE is "Active".

11.3 Information element definitions

```
   :

DPCH-CompressedModeInfo ::=         SEQUENCE {
    tgp-SequenceList                    TGP-SequenceList
}

DPCH-CompressedModeStatusInfo ::=   SEQUENCE {
    tgps-Reconfiguration-CFN            TGPS-Reconfiguration-CFN
    tgp-SequenceShortList                   SEQUENCE (SIZE (1..maxTGPS)) OF
                                            TGP-SequenceShort
}

TGPS-Reconfiguration-CFN        INTEGER (0..255)

TGP-SequenceList ::=                SEQUENCE (SIZE (1..maxTGPS)) OF
                                        TGP-Sequence

TGP-Sequence ::=                    SEQUENCE {
    tgpsi                               TGPSI,
    tgps-Status                         CHOICE {
        activate                            SEQUENCE {
            tgcfn                               TGCFN
        },
        deactivate                          NULL
    },
    tgps-ConfigurationParams            TGPS-ConfigurationParams            OPTIONAL
}

TGPS-ConfigurationParams ::=        SEQUENCE {
    tgmp                                TGMP,
    tgprc                               TGPRC,
    tgsn                                TGSN,
    tgl1                                TGL,
    tgl2                                TGL                                 OPTIONAL,
    tgd                                 TGD,
    tgpl1                               TGPL,
    tgpl2                               TGPL                                OPTIONAL,
    rpp                                 RPP,
    itp                                 ITP,
    ul-DL-Mode                          UL-DL-Mode,
    -- TABULAR: Compressed mode method is nested inside UL-DL-Mode
    dl-FrameType                        DL-FrameType,
    deltaSIR1                           DeltaSIR,
    deltaSIRAfter1                      DeltaSIR,
    deltaSIR2                           DeltaSIR                            OPTIONAL,
    deltaSIRAfter2                      DeltaSIR                            OPTIONAL,
    nidentifyAbort                      NidentifyAbort                      OPTIONAL,
    treconfirmAbort                     TreconfirmAbort                     OPTIONAL
}

UL-DL-Mode ::=                      CHOICE {
    ul                                  UL-CompressedModeMethod,
    dl                                  DL-CompressedModeMethod,
    ul-and-dl                               SEQUENCE {
        ul                                      UL-CompressedModeMethod,
        dl                                      DL-CompressedModeMethod
    }
}

UL-CompressedModeMethod ::=         ENUMERATED {
                                        sf-2,
                                        higherLayerScheduling }

DL-CompressedModeMethod ::=         ENUMERATED {
                                        puncturing, sf-2,
                                        higherLayerScheduling }
```

13.4.2 VoidCOMPRESSED_MODE_ERROR

This variable contains information on whether the received compressed mode configuration from the UTRAN has resulted in an illegal overlap causing a runtime error.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
COMPRESSED_MODE_ERROR	MP		Boolean	

3GPP TSG-RAN WG2 Meeting #21
Busan, Korea, May 21st-25th 2001

Tdoc R2-011246

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **757** ⌘ rev **r1** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Corrections concerning inter RAT procedures
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-05-23
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential 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)*

Reason for change: ⌘ Rationale for original version of this CR:
- Correction of errors
- Removal of incomplete functionality
- Clarification

Summary of change: ⌘ The following changes are proposed in the original version of this CR:

- Clarify that with the HANDOVER TO UTRAN COMMAND message UTRAN should apply value “initialise” for IE “Timing indication” that UE shall act accordingly regardless of the contents of this IE
- For reasons of clarity and consistency, IE “Re- establish timer” is moved from the level of IE “SIB type 16” to the level of IE Predefined RB configuration. The change to ASN.1 is backwards compatible
- The proposal is to remove the pathloss from the inter RAT measurements since the current specification in incomplete (the details of IE “GSM output power” are specified neither in the tabular nor in the ASN.1: empty sequence). The proposal is to remove this in a manner maximising backwards compatibility and facilitating re- introduction in a later release:
  - Maintain the UTRAN (signalling) option to request pathloss for the inter RAT case but speecify that the UE shall consider this request as an invalid configuration
  - Remove IE “Output power” from IE “Inter-RAT cell info list”. Replace the IE within the ASN.1 by a dummy
  - Keep the measurement reporting signalling unchanged
- A UE timer is introduced that monitors the timely completion of the inter RAT cell change order from UTRAN procedure. This timer corresponds with the period UTRAN maintains the radio resources to make it possible for the UE to return in case the cell change fails. T309, which is currently defined to monitor inter RAT cell selection, is re- used for this purpose. Moreover, additional clarification is added regarding possible failure cases for the inter

RAT cell change order from UTRAN procedure

- Clarification is added concerning the use of Power offset P pilot-DPDCH
- The Default DPCH offset value has been removed from the preconfiguration (it serves to distribute the UE over time) since it can not be pre- determined. In order to avoid adding the information to the handover message, a rule has been introduced relating it to the SRNTI
- The use of DOFF within the CFN calculations was based on an incorrect assumption regarding the value range of DOFF (which is now specified as a multiple of 512 chips). This has been corrected
- An additional clause has been added to clarify the UE requirements upon receiving a HANDOVER TO UTRAN COMMAND including a not supported configuration
- Additional clarification is proposed concerning the UE requirements upon receiving the inter RAT handover from UTRAN in CELL_FACH state. The proposal is to clarify that the UE shall reject the procedure and indicate that the message is not compatible with the receiver state. This will facilitate the introduction of handover procedure in CELL_FACH in a later release

The following changes are proposed in r1 of this CR:

- Rephrasing of resumption upon handover failure into continue original connection
- Clarification of start conditions for T309
- Correction of inconsistency between tabular and ASN.1 for the HANDOVER FROM UTRAN COMMAND message: the size of the RAB list is clarified to be limited to 1 for all system types used in this version.
- Correction of inconsistency between tabular and ASN.1 for the System Specific Capability list in the RRC CONNECTION SETUP COMPLETE, SECURITY MODE COMMAND and UE CAPABILITY INFORMATION: To align with ASN.1, the use of constant “maxSystemCapability” (=16) is replaced with the constant “maxInterSysMessages” (=4). A clarification is also added that the only 4 system specific capabilities can be requested by the IE “Capability update requirement”, since the size of that list can be 16 (also in ASN.1). Any exceeding items shall be ignored by the UE.
- Correction of inconsistency between tabular and ASN.1 concerning the IE “Downlink DPCH info for each radio link Post” (10.3.6.22): The definition of Code number and spreading factor is aligned to ASN:1 in the same way as done for the IE “Downlink DPCH info for each radio link” (10.3.6.21).
- In the ASN.1 the IE RAB-InfoPost has been removed since this IE only applies in the preconfiguration case, in which it is already covered

Consequences if not approved: ⌘

The following main problems are foreseen:

- Upon inter RAT cell change UTRAN may keep radio resources longer than needed or the UE may fail to return because UTRAN has already released the resources
- Interoperability problems due to missing specification of the Default DPCH offset value to be used upon inter RAT handover to UTRAN

Backwards compatibility analysis:

- Both the signalling and the required UE behaviour for the inter RAT handover procedure have been changed but this only affects the corrected function. If this correction is not performed, the handover interrupt time will be too long while there may also be interoperability problems
- The inter RAT cell change procedure was corrected to prevent that radio resources remain allocated for a long time.

Clauses affected: ⌘ 8.3.6.2, 8.3.6.3, 8.3.6.4a (new), 8.3.7.8a (new), 8.3.11.3, 8.3.11.4, 8.3.11.5, 8.5.15.1, 8.5.15.2, 8.5.15.4, 8.6.6.21, 8.6.7.5, 8.6.7.6, 10.2.15, 10.2.41, 10.2.43, 10.2.48.8.19, 10.2.56, 10.3.3.2, 10.3.4.7, 10.3.6.18, 10.3.6.22, 10.3.6.26, 10.3.7.23, 11, 13.1, 13.4.0, 14.13.1.1

Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	Changes as compared to the draft version presented at the R2#19 meeting are highlighted		

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.

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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.3.6 Inter-RAT handover to UTRAN

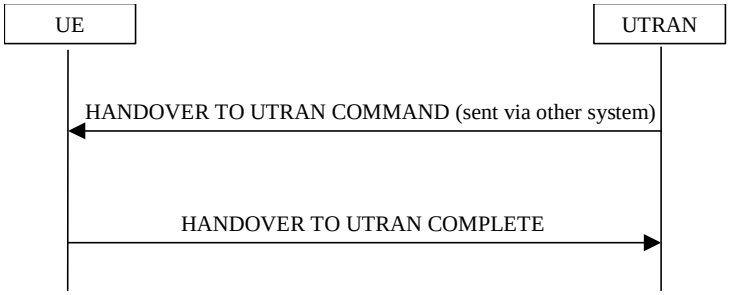

Figure 52: Inter-RAT handover to UTRAN, successful case

8.3.6.1 General

The purpose of the inter-RAT handover procedure is to, under the control of the network, transfer a connection between the UE and another radio access technology (e.g. GSM) to UTRAN.

8.3.6.2 Initiation

The procedure is initiated when a radio access technology other than UTRAN, e.g. GSM, using system specific procedures, orders the UE to make a handover to UTRAN.

A HANDOVER TO UTRAN COMMAND message is sent to the UE via the radio access technology from which inter-system handover is performed.

In case UTRAN decides to uses a predefined or default radio configuration that is stored in the UE, it should include the following information in the HANDOVER TO UTRAN COMMAND message.

- the IE "U-RNTI" to be assigned;
- the IE "Predefined configuration identity", to indicate which pre-defined configuration of RB, transport channel and physical channel parameters shall be used; or
- the IE "Default configuration mode" and IE "Default configuration identity", to indicate which default configuration of RB, transport channel and physical channel parameters shall be used;
- PhyCH information elements.

NOTE 1: When using a predefined or default configuration during handover to UTRAN, UTRAN can only assign values of IEs "U-RNTI" and "scrambling code" that are within the special subranges defined exclusively for this procedure. UTRAN may re- assign other values after completion of the handover procedure.

NOTE 2: When using a predefined or default configuration during handover to UTRAN, fewer IEs are signalled; when using this signalling option some parameters e.g. concerning compressed mode, DSCH, SSDT can not be configured. In this case, the corresponding functionality can not be activated immediately.

In case UTRAN does not use a predefined radio configuration that is stored in the UE, it should include the following information in the HANDOVER TO UTRAN COMMAND message.

- the IE "U-RNTI" to be assigned;
- the complete set of RB, TrCH and PhyCH information elements to be used.

8.3.6.3 Reception of HANDOVER TO UTRAN COMMAND message by the UE

The UE shall be able to receive a HANDOVER TO UTRAN COMMAND message and perform an inter-RAT handover, even if no prior UE measurements have been performed on the target UTRAN cell and/or frequency.

The UE shall act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following. The UE shall:

- store a U-RNTI value (32 bits), which is derived by the IEs "SRNC identity" (12 bits) and "S-RNTI 2" (10 bits) included in IE "U-RNTI-short". In order to produce a full size U-RNTI value, a full size "S-RNTI" (20 bits) shall be derived by padding the IE "S-RNTI 2" with 10 zero bits in the most significant positions; and

- initialise the variable ESTABLISHED_SIGNALLING_CONNECTIONS with the signalling connections that remains after the handover according to the specifications of the source RAT;

- if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Predefined configuration":

  - initiate the radio bearer and transport channel configuration in accordance with the predefined parameters identified by the IE "Predefined configuration identity";

  - initiate the physical channels in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity" and the received physical channel information elements;

  - store information about the established radio access bearers and radio bearers according to the IE "Predefined configuration identity"; and

  - set the IE "RAB Info Post" in the variable ESTABLISHED_RABS and the IE "Re-establishment timer" in the IE "RAB Info" in the variable ESTABLISHED_RABS to "useT314";

- if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Default configuration":

  - initiate the radio bearer and transport channel configuration in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity";

  - initiate the physical channels in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity" and the received physical channel information elements;

NOTE IE "Default configuration mode" specifies whether the FDD or TDD version of the default configuration shall be used

  - set the IE "RAB Info Post" in the variable ESTABLISHED_RABS and the IE "Re-establishment timer" in the IE "RAB Info" in the variable ESTABLISHED_RABS to "useT314";

- if IE "Specification mode" is set to "Preconfiguration":

  - use the following values for parameters that are neither signalled within the HANDOVER TO UTRAN COMPLETE message nor included within pre- defined or default configuration:

    - 0 dB for the power offset $P_{Pilot\text{-}DPDCH}$ bearer in FDD;

    - calculate the Default DPCH Offset Value using the following formula:

      in FDD: Default DPCH Offset Value = (SRNTI 2 mod 600) * 512,

      in TDD: Default DPCH Offset Value = (SRNTI 2 mod 7)

    - handle the above Default DPCH Offset Value as if an IE with that value was included in the message, as specified in 8.6.6.21.

- if IE "Specification mode" is set to "Complete specification":

  - initiate the radio bearer, transport channel and physical channel configuration in accordance with the received radio bearer, transport channel and physical channel information elements;

- perform an open loop estimation to determine the UL transmission power according to subclause 8.5.3;

- apply the same ciphering (ciphered/unciphered, algorithm) as prior to inter--RAT handover, unless a change of algorithm is requested by means of the "Ciphering algorithm".

If the UE succeeds in establishing the connection to UTRAN, it shall:

- transmit a HANDOVER TO UTRAN COMPLETE message on the uplink DCCH;
- when the HANDOVER TO UTRAN COMPLETE message has been submitted to lower layers for transmission,:
  - if the IE "Transport format combination subset" was not included in the HANDOVER TO UTRAN COMMAND message or in the predefined parameters;
    - set the IE "Current TFC subset" in the variable TFS_SUBSET to "Full transport format combination set";
  - set the IE "Status" in the variable CIPHERING_STATUS to "Not started";
  - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE;
  - set the IE "Status" in the variable INTEGRITY_ PROTECTION_INFO to "Not started";
  - set the IE "Historical status" in the variable INTEGRITY_ PROTECTION_INFO to "Never been active";
  - set the IE "Reconfiguration" in the variable INTEGRITY_ PROTECTION _INFO to FALSE;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - set the variable ORDERED_RECONFIGURATION to FALSE;
  - set the variable FAILURE_INDICATOR to FALSE;
  - set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
  - set the variable INVALID_CONFIGURATION to FALSE;
  - set the variable PROTOCOL_ERROR_INDICATOR, TFC_SUBSET to FALSE;
  - set the variable PROTOCOL_ERROR_REJECT to FALSE;
  - set the variable TGSN_REPORTED to FALSE;
  - set the variable UNSUPPORTED_CONFIGURATION to FALSE;
  - clear all optional IEs in all variables, except those optional IEs that are set in this procedure;
- And the procedure ends.

8.3.6.4 Invalid Handover to UTRAN command message

If the UE receives a HANDOVER TO UTRAN COMMAND message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling according to the source radio access technology. The UE shall:

- if allowed by the source RAT:
  - transmit an RRC STATUS message to the source radio access technology; and
  - include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- Other details may be provided in the specifications related to the source radio access technology.

8.3.6.4a Unsupported configuration in HANDOVER TO UTRAN COMMAND message

If the UE does not support the configuration included in the HANDOVER TO UTRAN COMMAND message e.g. the message includes a pre- defined configuration that the UE hasn't stored, the UE shall:

- continues the connection using the other radio access technology; and

- indicate the failure to the other radio access technology.

8.3.6.5 UE fails to perform handover

If the UE does not succeed in establishing the connection to UTRAN, it shall:

- terminate the procedure including release of the associated resources;
- resume the connection used before the handover; and
- indicate the failure to the other radio access technology.

Upon receiving an indication about the failure from the other radio access technology, UTRAN should release the associated resources and the context information concerning this UE.

8.3.6.6 Reception of message HANDOVER TO UTRAN COMPLETE by the UTRAN

Upon receiving a HANDOVER TO UTRAN COMPLETE message, UTRAN should consider the inter-RAT handover procedure as having been completed successfully and indicate this to the Core Network.

8.3.7 Inter-RAT handover from UTRAN

Figure 53: Inter-RAT handover from UTRAN, successful case

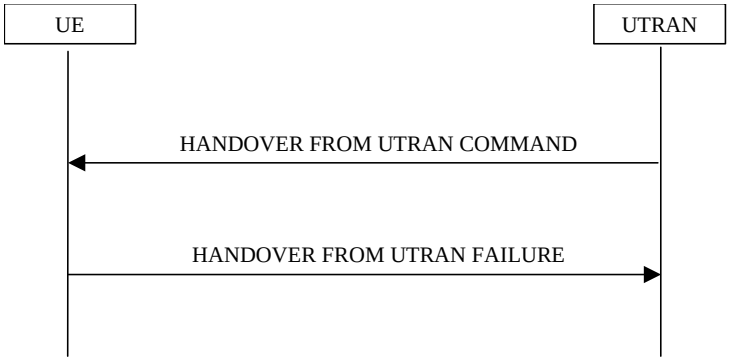

Figure 54: Inter-RAT handover from UTRAN, failure case

8.3.7.1 General

The purpose of the inter-RAT handover procedure is to, under the control of the network, transfer a connection between the UE and UTRAN to another radio access technology (e.g. GSM). This procedure may be used in CELL_DCH state.

NOTE: This procedure is applicable to CS domain service.

8.3.7.2 Initiation

The procedure is initiated when UTRAN orders a UE in CELL_DCH state, to make a handover to a radio access technology other than UTRAN, e.g. GSM.

To initiate the procedure, UTRAN sends a HANDOVER FROM UTRAN COMMAND message.

8.3.7.3 Reception of a HANDOVER FROM UTRAN COMMAND message by the UE

The UE shall be able to receive a HANDOVER FROM UTRAN COMMAND message and perform an inter-RAT handover, even if no prior UE measurements have been performed on the target cell.

The UE shall:

- establish the connection to the target radio access technology, by using the contents of the IE "Inter-RAT message". This IE contains a message specified in another standard, as indicated by the IE "System type", and carries information about the candidate/ target cell identifier(s) and radio parameters relevant for the target radio access technology. The correspondence between the value of the IE "System type", the standard to apply and the message contained within IE "Inter RAT message" is shown in the following:

Value of the IE "System type"	Standard to apply	Inter RAT Message
GSM (DCS 1800 band used)	GSM TS 04.18, version 8.5.0 or later	HANDOVER COMMAND
GSM (PCS 1900 band used)	GSM TS 04.18, version 8.5.0 or later	HANDOVER COMMAND
cdma2000	TIA/EIA/IS-2000 or later, TIA/EIA/IS-833 or later, TIA/EIQ/IS-834 or later	

- if the IE "System type" has the value "GSM (DCS 1800 band used)":
  - set the BAND_INDICATOR [26] to "ARFCN indicates 1800 band";
- if the IE "System type" has the value " GSM (PCS 1900 band used)":
  - set the BAND_INDICATOR [26] to "ARFCN indicates 1900 band";
- apply the "Inter RAT Message" according to the "standard to apply" in the table above.
- in case one or more IEs "RAB info" is included in the HANDOVER FROM UTRAN COMMAND message:
  - connect upper layer entities corresponding to indicated RABs to the radio resources indicated in the inter-RAT message;

NOTE: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification.

8.3.7.4 Successful completion of the inter-RAT handover

Upon successfully completing the handover, UTRAN should release the radio connection and remove all context information for the concerned UE.

NOTE: The release of the UMTS radio resources is initiated from the target RAT.

8.3.7.5 UE fails to complete requested handover

If the UE does not succeed in establishing the connection to the target radio access technology, it shall:

- revert back to the UTRA configuration;
- establish the UTRA physical channel(s) used at the time for reception of HANDOVER FROM UTRAN COMMAND;
- if the UE does not succeed to establish the UTRA physical channel(s):
  - select a suitable UTRA cell according to [4];
  - perform a cell update procedure according to subclause 8.3.1 with cause "Radio link failure";

- when the cell update procedure has completed successfully:
  - proceed as below;

- transmit the HANDOVER FROM UTRAN FAILURE message setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "physical channel failure";
- When the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layer for transmission:
  - The procedure ends.

8.3.7.6 Invalid HANDOVER FROM UTRAN COMMAND message

If the IE "Inter-RAT message" received within the HANDOVER FROM UTRAN COMMAND message does not include a valid inter RAT handover message in accordance with the protocol specifications for the target RAT, the UE shall perform procedure specific error handling as follows. The UE shall:

- set the IE "failure cause" to the cause value "Inter-RAT protocol error";
- include the IE "Inter-RAT message" in case the target RAT provides further details about the inter RAT protocol error;
- transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;
- when the transmission of the HANDOVER FROM UTRAN FAILURE message has been confirmed by RLC:
  - continue with any ongoing processes and procedures as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;
  - And the procedure ends.

If the HANDOVER FROM UTRAN COMMAND message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- set the IE "RRC transaction identifier" in the HANDOVER FROM UTRAN FAILURE message to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;
- when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;
  - And the procedure ends.

8.3.7.7 Reception of an HANDOVER FROM UTRAN FAILURE message by UTRAN

Upon receiving an HANDOVER FROM UTRAN FAILURE message, UTRAN may initiate the release the resources in the target radio access technology.

8.3.7.8 Unsupported configuration in HANDOVER FROM UTRAN COMMAND message

If the UTRAN instructs the UE to perform a non-supported handover scenario, e.g. multiple RAB or to use a non-supported configuration, the UE shall:

- transmit a HANDOVER FROM UTRAN FAILURE message, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "configuration unacceptable";
  - when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
    - resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;
    - And the procedure ends.

8.3.7.8a Reception of HANDOVER FROM UTRAN COMMAND message by UE in CELL_FACH

If the UE receives HANDOVER FROM UTRAN COMMAND while in CELL_FACH, the UE shall:

- transmit a HANDOVER FROM UTRAN FAILURE message, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "protocol error", include IE “Protocol error information” and set the value of IE “Protocol error cause” to “Message not compatible with receiver state”;

  when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
    - resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;
    - And the procedure ends.

8.3.11 Inter-RAT cell change order from UTRAN

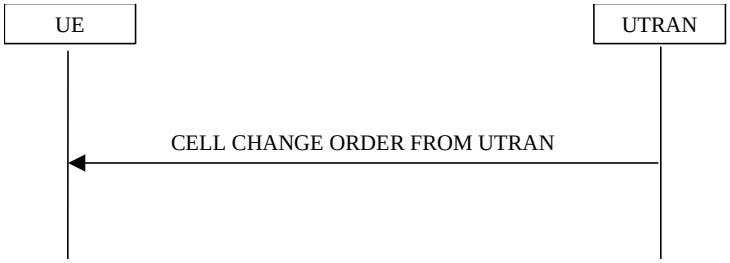

Figure 55: Inter–RAT cell change order from UTRAN

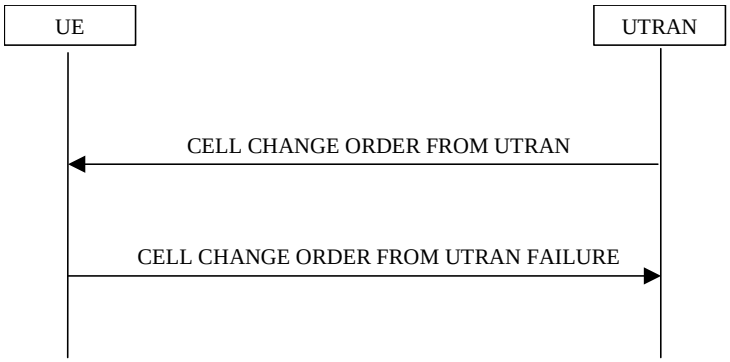

Figure 55a: Inter-RAT cell change order from UTRAN, failure case

8.3.11.1 General

The purpose of the inter-RAT cell change order procedure is to transfer, under the control of the network, a connection between the UE and UTRAN to another radio access technology (e.g. GSM). This procedure may be used in CELL_DCH and CELL_FACH state.

NOTE: This procedure is applicable for services in the PS domain.

8.3.11.2 Initiation

The procedure is initiated when UTRAN orders a UE in CELL_DCH or CELL_FACH state, to make a cell change to a radio access technology other than UTRAN, e.g. GSM.

To initiate the procedure, UTRAN sends a CELL CHANGE ORDER FROM UTRAN message.

8.3.11.3 Reception of an CELL CHANGE ORDER FROM UTRAN message by the UE

The UE shall be able to receive a CELL CHANGE ORDER FROM UTRAN message and perform a cell change order to another RAT, even if no prior UE measurements have been performed on the target cell.

The UE shall:

- start timer T309; and
- establish the connection to the other radio access technology, as specified within IE "Target cell info". This IE specifies the target cell identity, in accordance with the specifications for that other RAT. In case the target cell is a GSM/ GPRS cell, IE "Target cell info" may also include IE "NC mode", which specifies the cell selection mode to be applied in the target cell; and
- if IE "NC mode" is not included in the CELL CHANGE ORDER FROM UTRAN:
  - retrieve it from the target cell as specified in [43];
  - act upon IE "NC mode" as specified in [43].

- if one or more IEs "RAB info" are included in the CELL CHANGE ORDER FROM UTRAN message:
  - connect the upper layer entities corresponding to indicated RABs to the radio resources offered by the target RAT;

NOTE: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification. In case of GSM/GPRS proceed according to the procedure Network control cell reselection procedure as specified in [44].

8.3.11.4 Successful completion of the cell change order

Upon succesful completion of the cell change order the UE shall stop timer T309.

Upon indication of the UE having successfully completed the cell change order, UTRAN should release the radio connection and remove all context information for the concerned UE.

NOTE: The release of the UMTS radio resources is initiated from another RAT.

8.3.11.5 Expiry of timer T309 or UE fails to complete requested cell change order

If timer T309 expires prior to the succesful establishment of a connection to the target RAT, or if the establishment of the connection to the other RAT failed due to other reasons e.g. (random) access failure, rejection due to lack of resources, the UE shall:

~~If the UE does not succeed in establishing a connection to the target RAT, the UE shall:~~

- if it received the CELL CHANGE ORDER FROM UTRAN message in state CELL_DCH:
  - revert back to the UTRA configuration;
  - establish the UTRA physical channel(s) used at the time for reception of CELL CHANGE ORDER FROM UTRAN;
  - if the UE does not succeed in establishing the UTRA physical channel(s):
    - select a suitable UTRA cell according to [4];
    - perform a cell update procedure according to subclause 8.3.1 with cause "Radio link failure";
    - when the cell update procedure has completed successfully:
      - proceed as below;
  - transmit the CELL CHANGE ORDER FROM UTRAN FAILURE message setting the information elements as specified below:
    - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - clear that entry;
    - set the IE "Inter-RAT change failure" to "physical channel failure";
  - When the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layer for transmission, the procedure ends.
- if the UE receives the CELL CHANGE ORDER FROM UTRAN message in CELL_FACH state:
  - revert to the cell it was camped on at the reception of the CELL CHANGE ORDER FROM UTRAN message;
  - if the UE is unable to return to this cell:
    - select a suitable UTRA cell according to [4];

- initiate the cell update procedure according to subclause 8.3.1 using the cause "cell re-selection";
- when the cell update procedure completed successfully:
- proceed as below;

- transmit the CELL CHANGE ORDER FROM UTRAN FAILURE message setting the information elements as specified below:
- include the IE "RRC transaction identifier"; and
- set it to the value of "RRC transaction identifier" in the entry for the CELL CHANGE ORDER FROM UTRAN message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "Inter-RAT change failure" to "physical channel failure";
- When the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layer for transmission:
- The procedure ends.

8.3.11.6 Unsupported configuration in CELL CHANGE ORDER FROM UTRAN message

If the UTRAN instructs the UE to perform a non-supported cell change order scenario e.g. multiple RAB or to use a non-supported configuration, the UE shall:

- transmit a CELL CHANGE ORDER FROM UTRAN FAILURE message, setting the information elements as specified below:
- include the IE "RRC transaction identifier"; and
- set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "Inter-RAT change failure" to "configuration unacceptable";
- when the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
- resume normal operation as if the CELL CHANGE ORDER FROM UTRAN message has not been received;
- And the procedure ends.

8.3.11.7 Invalid CELL CHANGE ORDER FROM UTRAN message

If the CELL CHANGE ORDER FROM UTRAN message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- set the IE "RRC transaction identifier" in the CELL CHANGE ORDER FROM UTRAN FAILURE message to the value of "RRC transaction identifier" in the entry for the CELL CHANGE ORDER FROM UTRAN message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;

- transmit a CELL CHANGE ORDER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;
- when the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
    - resume normal operation as if the invalid CELL CHANGE ORDER FROM UTRAN message has not been received;
    - And the procedure ends.

8.5.15 CFN calculation

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*38400 - DOFF~~*512~~) div 38400) mod 256

- for TDD:

  CFN = (SFN - DOFF) mod 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:

- if IE "Timing indication" has the value "initialise" (i.e. timing re-initialised hard handover):
  - if IE "CFN-targetSFN frame offset" is not included:
    - 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;
    - set the CFN according to the following formula:
      - for FDD:
        - CFN = ((SFN*38400 - DOFF~~*512~~) div 38400) mod 256;
      - for TDD:
        - CFN = (SFN - DOFF) mod 256;
  - if IE "CFN-targetSFN frame offset" is included in the message causing the UE to perform a timing re-initialised hard handover, CFN shall be calculated according to the following formula:
    - for FDD:
      - CFNnew = (CFNold*38400+COFF*38400 -DOFF~~*512~~) div 38400) mod 256
    - for TDD:
      - CFNnew = (CFNold+COFF - DOFF) mod 256
        - where COFF is the value of "CFN-targetSFN frame offset".

NOTE: CFN-targetSFN frame offset = (TargetSFN-CFN)mod256

- 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

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 mod 256

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):

~~Initialisation for CELL_DCH state after intersystem handover:~~

- read SFN on target cell and set the CFN ~~shall be calculated~~ according to the following formula:
  - for FDD:

    CFN = ((SFN*38400 - DOFF~~*512~~) div 38400) mod 256
  - for TDD:

    CFN = (SFN - DOFF) mod 256

8.6.6.21 Default DPCH Offset Value

The UE shall:

- if the IE "Default DPCH Offset Value" is included:
  - use its value to determine Frame Offset and Chip Offset from the SFN timing in a cell;
  - store the received value in variable DOFF.

  if the IE "Default DPCH Offset Value" is not included:
  - use the previously received value stored in variable DOFF. If there is no previously received value stored in DOFF, the UE should use the value 0.

After transition from CELL_DCH state to other states, the UE shall:

- erase the value stored in variable DOFF.

8.6.7.5 Inter-RAT measurement quantity

If the IE "Inter-RAT measurement quantity" is received in a MEASUREMENT CONTROL message and CHOICE system is GSM, the UE shall:

- if IE "BSIC verification required" is set to "required", for cells that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", and that has a "verified" BSIC:
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if IE "BSIC verification required" is set to "not required", for cells that match any of the BCCH ARFCN in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", regardless if the BSIC is "verified" or "non-verified":
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if the IE "Measurement quantity" is set to "pathloss"; ~~and~~
- ~~for any inter-RAT cell indicated by the IE "Cells for measurement", the IE "Output power" in the inter-RAT cell info list in the variable CELL_INFO_LIST is not present:~~
  - set the variable CONFIGURATION_INCOMPLETE to TRUE.

NOTE: The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

8.6.7.6 Inter-RAT reporting quantity

If the IE "Inter-RAT reporting quantity" is received by the UE, the UE shall:

- store the content of the IE to the variable MEASUREMENT_IDENTITY.

If the IE "Inter-RAT measurement quantity" is received and CHOICE system is GSM, the UE shall check each quantity in the GSM choice. The UE shall include measured results in MEASUREMENT REPORT as specified in the IE "Inter-RAT reporting quantity" with the following restrictions:

- if the UE has not confirmed the BSIC of the measured cell:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.
- if the UE has confirmed the BSIC of the measured cell, then:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" nor "BSIC re-confirmation" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.
- if IE "Pathloss" is set to "TRUE":
  - set the variable CONFIGURATION_INCOMPLETE to TRUE.
  - ~~include optional IE "Pathloss" with a value set to the measured pathloss to that GSM cell in IE "Inter-RAT measured results list";~~
- if IE "Observed time difference to GSM cell" is set to "TRUE":
  - include optional IE "Observed time difference to GSM cell" with the value set to the time difference to that GSM cell for the GSM cells that have a BSIC that is "verified", and that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list". Observed time difference to GSM cells with "non-verified" BSIC shall not be included;

- if IE "GSM Carrier RSSI" is set to "TRUE":
    - include optional IE "GSM Carrier RSSI" with a value set to the measured RXLEV to that GSM cell in IE "Inter-RAT measured results list";
- if the BSIC of reported GSM cell is "verified":
    - set the CHOICE BSIC to "Verified BSIC" and IE "inter-RAT cell id" to the value that GSM cell had in the IE "Inter-RAT cell info list";
- if the BSIC of reported GSM cell is "non-verified":
    - set the CHOICE BSIC to "Non verified BSIC" and the IE "BCCH ARFCN" to the value of that GSM cells ARFCN;

The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

10.2.15 HANDOVER FROM UTRAN COMMAND

This message is used for handover from UMTS to another system e.g. GSM. One or several messages from the other system can be included in the Inter-RAT message information element in this message. These messages are structured and coded according to that systems specification.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
RB information elements				
RAB information list	OP	1 to <maxRABsetup>		For each RAB to be handed over. In this version, the maximum size of the list of 1 shall be applied for all system types in the IE "Inter-RAT message"
>RAB info	MP		RAB info 10.3.4.8	
Other information elements				
Inter-RAT message	MP		Inter-RAT message 10.3.8.8	

10.2.41 RRC CONNECTION SETUP COMPLETE

This message confirms the establishment of the RRC Connection by the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
START list	MP	1 to <maxCNdomains>		START [40] values for all CN domains.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	START value to be used in this CN domain.
UE radio access capability	OP		UE radio access capability 10.3.3.42	
Other information elements				
UE system specific capability	OP	1 to <maxSystemCapabilitymaxInterSysMessages>		
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	

10.2.43 SECURITY MODE COMMAND

This message is sent by UTRAN to start or reconfigure ciphering and/or integrity protection parameters.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN to UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	MP		Integrity check info 10.3.3.16	
Security capability	MP		Security capability 10.3.3.37	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	Only present if ciphering shall be controlled
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	Only present if integrity protection shall be controlled
CN Information elements				
CN domain identity	MP		CN domain identity 10.3.1.1	Indicates which cipher and integrity protection keys are applicable
Other information elements				
UE system specific security capability	CH	1 to <maxInterSysMessagesmaxSystemCapability>		This IE is included if the IE "Inter-RAT UE radio access capability" was included in RRC CONNECTION SETUP COMPLETE message
Inter-RAT UE security capability	MP		Inter-RAT UE security capability 10.3.8.8a	

10.2.48.8.19 System Information Block type 16

The system information block type 16 contains radio bearer, transport channel and physical channel parameters to be stored by UE in idle and connected mode for use during handover to UTRAN.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~**UE information elements**~~				
~~Re-establishment timer~~	~~MP~~		~~Re-establishment timer 10.3.3.30~~	
RB information elements				
Predefined RB configuration	MP		Predefined RB configuration 10.3.4.7	
TrCH Information Elements				
Predefined TrCH configuration	MP		Predefined TrCH configuration 10.3.5.9	
PhyCH Information Elements				
Predefined PhyCH configuration	MP		Predefined PhyCH configuration 10.3.6.56	

10.2.56 UE CAPABILITY INFORMATION

This message is sent by UE to convey UE specific capability information to the UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
RRC transaction identifier	OP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
UE radio access capability	OP		UE radio access capability 10.3.3.42	
Other information elements				
UE system specific capability	OP	1 to <maxInterSysMessagesmaxSystemCapability>		
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability10.3.8.7	

10.3.3.2 Capability Update Requirement

This IE indicates to the UE which specific capabilities to transfer to the network.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE radio access FDD capability update requirement	MP		Boolean	TRUE indicates update required
UE radio access TDD capability update requirement	MP		Boolean	TRUE indicates update required
System specific capability update requirement list	OP	1 to <maxSystemCapability>		In this version, a maximum size of 4 of the list shall be applied and any items after the 4th item in the list shall be ignored.
>System specific capability update requirement	MP		Enumerated (GSM)	

Default value is:

"UE radio capability FDD update requirement" = false

"UE radio capability TDD update requirement" = false

"System specific capability update requirement" not present.

10.3.4.7 Predefined RB configuration

This information element concerns a pre- defined configuration of radio bearer parameters

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE information elements				
Re-establishment timer	MP		Re-establishment timer 10.3.3.30	Only one RAB supported
Signalling radio bearer information				
Signalling RB information to setup List	MP	1 to <maxSRBsetup>		For each signalling radio bearer
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
RB information				Only one RAB supported
RB information to setup list	MP	1 to <maxRBcount>		
>RB information to setup	MP		RB information to setup 10.3.4.20	

10.3.6.18 Downlink DPCH info common for all RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timing Indication	MP		Enumerated(Initialise, Maintain)	(Note1)
CFN-targetSFN frame offset	CV TimInd		Integer(0..255)	In frame
CHOICE *mode*	MP			
>FDD				
>>Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	
>>Power offset $P_{Pilot-DPDCH}$	MP		Integer(0..24)	Power offset equals P_{Pilot} - P_{DPDCH}, range 0..6 dB, in steps of 0.25 dB
>>Downlink rate matching restriction information	OP		Downlink rate matching restriction information 10.3.6.31	If this IE is set to "absent", no Transport CH is restricted in TFI.
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	
>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>CHOICE *SF*	MP			
>>>SF = 256				
>>>>Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>>SF = 128				
>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>>Otherwise				(no data)
>TDD				
>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info

CHOICE *SF*	Condition under which the given *SF* is chosen
SF=128	"Spreading factor" is set to 128
SF=256	"Spreading factor" is set to 256
Otherwise	"Spreading factor" is set to a value distinct from 128 and 256

Condition	Explanation
TimInd	This IE is OPTIONAL if the IE "Timing Indication" is set to "Initialise". Otherwise it is absent.

NOTE 1: Within the HANDOVER TO UTRAN COMMAND message, only value “initialise” is applicable.

10.3.6.22 Downlink DPCH info for each RL Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumber with "code number" in ASN.1
>>Code number	MP		Integer(0.. Spreading factor - 1maxCodeNb)	
>>TPC combination index	MP		TPC combination index 10.3.6.85	
>TDD				
>>Downlink DPCH timeslots and codes	MP		Downlink Timeslots and Codes 10.3.6.32	

10.3.6.26 Downlink information common for all radio links Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Pre 10.3.6.20	
~~Default DPCH Offset Value~~	~~OP~~		~~Default DPCH Offset Value, 10.3.6.16~~	

10.3.7.23 Inter-RAT cell info list

Contains the measurement object information for an inter-RAT measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Inter-RAT cell removal	MP			
>Remove all inter-RAT cells				No data
>Remove some inter-RAT cells				
>>Removed inter-RAT cells	MP	1 to <maxCellMeas>		
>>>Inter-RAT cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no inter-RAT cells				
New inter-RAT cells	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	MD		Integer(0 .. <maxCellMeas> - 1)	
>CHOICE *Radio Access Technology*	MP			
>>GSM				
>>>Cell individual offset	MD		Integer (-50..50)	In dB Default value is 0 dB Used to offset measured quantity value
>>>Cell selection and re-selection info	CV-*BCHopt*		Cell selection and re-selection info for SIB11/12 10.3.2.4	Only when sent in system information. If HCS is not used and all the parameters in cell selection and re-selection info are default values, this IE is absent.
>>>BSIC	MP		BSIC 10.3.8.2	
>>>Band indicator	MP		Enumerated (DCS 1800 band used, PCS 1900 band used)	Indicates how to interpret the BCCH ARFCN
>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
~~>>>Output power~~	~~OP~~			
>>IS-2000				
>>>System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Subclause 3. 7.3.3.2.27, *Candidate Frequency Neighbour List Message*
Cell for measurement	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	MP		Integer(0 .. <MaxInterCells>)	

```
-- **************************************************
--
-- HANDOVER TO UTRAN COMMAND
--
-- **************************************************


HandoverToUTRANCommand-r3 ::= CHOICE {
    r3                              SEQUENCE {
        handoverToUTRANCommand-r3       HandoverToUTRANCommand-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

HandoverToUTRANCommand-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        activationTime                  ActivationTime                      OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
        rab-Info                        RAB-Info-Post,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                srb-InformationSetupList        SRB-InformationSetupList,
                rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
                ul-CommonTransChInfo            UL-CommonTransChInfo,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
                ul-DPCH-Info                    UL-DPCH-Info,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        dl-PDSCH-Information            DL-PDSCH-Information OPTIONAL,
                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation,
                dl-InformationPerRL-List        DL-InformationPerRL-List,
                frequencyInfo                   FrequencyInfo
            },
            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
                    }
                },
                rab-Info                        RAB-Info-Post       OPTIONAL,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostFDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL-List        DL-InformationPerRL-ListPostFDD,
                        frequencyInfo                   FrequencyInfoFDD
                    },
                    tdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostTDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL             DL-InformationPerRL-PostTDD,
                        frequencyInfo                   FrequencyInfoTDD,
                        primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                    }

                }
            }
        },
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power
}
```

11.3 Information element definitions

```
<Cut untill next modified section>

-- **************************************************
--
--     RADIO BEARER INFORMATION ELEMENTS (10.3.4)
--
-- **************************************************

<Cut untill next modified section>

PredefinedRB-Configuration ::=      SEQUENCE {
    re-EstablishmentTimer               Re-EstablishmentTimer,
    srb-InformationList                 SRB-InformationSetupList,
    rb-InformationList                  RB-InformationSetupList
}

PreDefRadioConfiguration ::=        SEQUENCE {
    -- User equipment IEs
    re-EstablishmentTimer               Re-EstablishmentTimer,
    -- Radio bearer IEs
    predefinedRB-Configuration          PredefinedRB-Configuration,
    -- Transport channel IEs
    preDefTransChConfiguration          PreDefTransChConfiguration,
    -- Physical channel IEs
    preDefPhyChConfiguration            PreDefPhyChConfiguration
}
```

```
-- **************************************************
--
--     PHYSICAL CHANNEL INFORMATION ELEMENTS (10.3.6)
--
-- **************************************************

<Cut untill next modified section>

DL-CommonInformation ::=            SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon          OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD  OPTIONAL,
            dpch-CompressedModeInfo             DPCH-CompressedModeInfo     OPTIONAL,
            tx-DiversityMode                    TX-DiversityMode            OPTIONAL,
            ssdt-Information                    SSDT-Information            OPTIONAL
        },
        tdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD  OPTIONAL
        }
    }
}

DL-CommonInformationPost ::=        SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPost
}

DL-CommonInformationPredef ::=      SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPredef    OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD
        },
        tdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD
        }
    }
}
```

```
-- ************************************************
--
--     MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- ************************************************

<Cut untill next modified section>

-- **TODO**, not defined yet
GSM-OutputPower ::=                 SEQUENCE {
}

<Cut untill next modified section>

NewInterRATCell ::=             SEQUENCE {
    interRATCellID                      InterRATCellID          OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
            interRATCellIndividualOffset        InterRATCellIndividualOffset,
            bsic                                BSIC,
            band-Indicator                      Band-Indicator,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPowerdummy                        GSM-OutputPowerNULL             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare1                              NULL,
        spare2                              NULL
    }
}

NewInterRATCell-HCS ::=             SEQUENCE {
    interRATCellID                      InterRATCellID              OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
            interRATCellIndividualOffset        InterRATCellIndividualOffset,
            bsic                                BSIC,
            band-Indicator                      Band-Indicator,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPowerdummy                        GSM-OutputPowerNULL             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare1                              NULL,
        spare2                              NULL
    }
}
```

13.1 Timers for UE

Timer	Start	Stop	At expiry
T300	Transmission of RRC CONNECTION REQUEST	Reception of RRC CONNECTION SETUP	Retransmit RRC CONNECTION REQUEST if V300 =< N300, else go to Idle mode
T302	Transmission of CELL UPDATE/URA UPDATE	Reception of CELL UPDATE CONFIRM/URA UPDATE CONFIRM	Retransmit CELL UPDATE/URA UPDATE if V302 =< N302, else, go to Idle mode
T304	Transmission of UE CAPABILITY INFORMATION	Reception of UE CAPABILITY INFORMATION CONFIRM	Retransmit UE CAPABILITY INFORMATION if V304 =< N304, else initiate a cell update procedure
T305	Entering CELL_FACH or URA_PCH or CELL_PCH state. Reception of CELL UDPATE CONFIRM/URA UPDATE CONFIRM.	Entering another state.	Transmit CELL UPDATE if T307 is not activated.
T307	When the timer T305 has expired and the UE detects "out of service area".	When the UE detects "in service area".	Transit to idle mode
T308	Transmission of RRC CONNECTION RELEASE COMPLETE	Not stopped	Transmit RRC CONNECTION RELEASE COMPLETE if V308 <=N308, else go to idle mode.
T309	Upon reselection of a cell belonging to another radio access system from connected mode, OR Reception of CELL CHANGE ORDER FROM UTRAN message	Successful establishment of a connection in the new cell	Resume the connection to UTRAN
T310	Transmission of PUSCH CAPACITY REQUEST	Reception of PHYSICAL SHARED CHANNEL ALLOCATION	Transmit PUSCH CAPACITY REQUEST if V310 =< N310, else procedure stops.
T311	Reception of PHYSICAL SHARED CHANNEL ALLOCATION message with the CHOICE "PUSCH allocation" set to "PUSCH allocation pending".	Reception of PHYSICAL SHARED CHANNEL ALLOCATION message with CHOICE "PUSCH allocation" set to "PUSCH allocation assignment".	UE may initiate a PUSCH capacity request procedure.
T312	When the UE starts to establish dedicated CH	When the UE detects consecutive N312 "in sync" indication from L1.	The criteria for physical channel establishment failure is fulfilled
T313	When the UE detects consecutive N313 "out of sync" indication from L1.	When the UE detects consecutive N315 "in sync" indication from L1.	The criteria for Radio Link failure is fulfilled
T314	When the criteria for radio link failure are fulfilled. The timer is started only if radio bearer(s) that are associated with T314 exist.	When the Cell Update procedure has been completed.	See subclause 8.3.1.13

Timer	Start	Stop	At expiry
T315	When the criteria for radio link failure are fulfilled. The timer is started only if radio bearer(s) that are associated with T315 exist.	When the Cell Update procedure has been completed.	See subclause 8.3.1.14
T316	When the UE detects "out of service area" in URA_PCH or CELL_PCH state	When the UE detects "in service area".	Initiate cell update procedure
T317	When the T316 expires and the UE detects "out of service area".	When the UE detects "in service area".	Transit to idle mode

13.4.0 CELL INFO LIST

This variable contains cell information on intra-frequency, inter-frequency and inter-RAT cells, as received in messages System Information Block Type 11, System Information Block Type 12, and MEASUREMENT CONTROL.

The first position in Intra-frequency cell info list corresponds to Intra-frequency cell id), the second to Intra-frequency cell id 1, etc.

The first position in Inter-frequency cell info list corresponds to Inter-frequency cell id), the second to Inter-frequency cell id 1, etc.

The first position in Inter-RAT cell info list corresponds to Intra-frequency cell id), the second to Inter-RAT cell id 1, etc.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency cell info	MP	1..<maxCellMeas>		
>CHOICE *position status*	MP			
>>Occupied				
>>>Cell info	MP		Cell info 10.3.7.2	
>>Vacant				No data
Inter-frequency cell info	MP	1..<maxCellMeas>		
>CHOICE *position status*	MP			
>>Occupied				
>>>Frequency info	MP		Frequency info 10.3.6.36	
>>>Cell info	MP		Cell info 10.3.7.2	
>>Vacant				No data
Inter-RAT cell info	MP	1..<maxCellMeas>		
>CHOICE *position status*	MP			
>>Occupied				
>>>CHOICE *Radio Access Technology*				
>>>>GSM				
>>>>>Cell selection and re-selection info	MP		Cell selection and re-selection info for SIB11/12 10.3.2.4	
>>>>>BSIC	MP		BSIC 10.3.8.2	
>>>>>BCCH ARFCN	MP		Integer (0..1023)	[43]
~~>>>>>Output power~~	~~OP~~			
>>>>IS-2000				
>>>>>System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Subclause 3. 7.3.3.2.27, *Candidate Frequency Neighbour List Message*
>>Vacant				No data

14.13.1.1 Pre-defined configuration information

Another system may provide the UE with one or more pre- defined UTRAN configurations, comprising of radio bearer, transport channel and physical channel parameters. The UE shall store the information, and use it upon handover to UTRAN if requested to do so within the HANDOVER TO UTRAN COMMAND message. The pre- defined configuration information includes the following RRC information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB information elements				
Predefined radio configurations		1 to <maxPredefConfigCount>		
>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5	
>Predefined configuration value tag	OP		Predefined configuration value tag 10.3.4.6	
~~**UE information elements**~~				
~~Re-establishment timer~~	~~MP~~		~~Re-establishment timer 10.3.3.30~~	
RB information elements				
>Predefined RB configuration	MP		Predefined RB configuration 10.3.4.7	
TrCH Information Elements				
>Predefined TrCH configuration	MP		Predefined TrCH configuration 10.3.5.9	
PhyCH Information Elements				
>Predefined PhCH configuration	MP		Predefined PhyCH configuration 10.3.6.56	

Multi Bound	Explanation
MaxPredefConfigCount	Maximum number of predefined configurations

3GPP TSG-RAN WG2 Meeting #21
Busan, Korea, May 21st-25th 2001

Tdoc R2-011247

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **758** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Corrections concerning inter RAT procedures
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-05-25
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential 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)*

Reason for change: ⌘ Rationale for original version of this CR:
- Correction of errors
- Removal of incomplete functionality
- Clarification

Summary of change: ⌘ The following changes are proposed in the original version of this CR:

- Clarify that with the HANDOVER TO UTRAN COMMAND message UTRAN should apply value “initialise” for IE “Timing indication” that UE shall act accordingly regardless of the contents of this IE
- For reasons of clarity and consistency, IE “Re- establish timer” is moved from the level of IE “SIB type 16” to the level of IE Predefined RB configuration. The change to ASN.1 is backwards compatible
- The proposal is to remove the pathloss from the inter RAT measurements since the current specification in incomplete (the details of IE “GSM output power” are specified neither in the tabular nor in the ASN.1: empty sequence). The proposal is to remove this in a manner maximising backwards compatibility and facilitating re- introduction in a later release:
  - Maintain the UTRAN (signalling) option to request pathloss for the inter RAT case but speecify that the UE shall consider this request as an invalid configuration
  - Remove IE “Output power” from IE “Inter-RAT cell info list”. Replace the IE within the ASN.1 by a dummy
  - Keep the measurement reporting signalling unchanged
- A UE timer is introduced that monitors the timely completion of the inter RAT cell change order from UTRAN procedure. This timer corresponds with the period UTRAN maintains the radio resources to make it possible for the UE to return in case the cell change fails. T309, which is currently defined to monitor inter RAT cell selection, is re- used for this purpose. Moreover, additional clarification is added regarding possible failure cases for the inter

RAT cell change order from UTRAN procedure

- Clarification is added concerning the use of Power offset P pilot-DPDCH
- The Default DPCH offset value has been removed from the preconfiguration (it serves to distribute the UE over time) since it can not be pre- determined. In order to avoid adding the information to the handover message, a rule has been introduced relating it to the SRNTI
- The use of DOFF within the CFN calculations was based on an incorrect assumption regarding the value range of DOFF (which is now specified as a multiple of 512 chips). This has been corrected
- An additional clause has been added to clarify the UE requirements upon receiving a HANDOVER TO UTRAN COMMAND including a not supported configuration
- Additional clarification is proposed concerning the UE requirements upon receiving the inter RAT handover from UTRAN in CELL_FACH state. The proposal is to clarify that the UE shall reject the procedure and indicate that the message is not compatible with the receiver state. This will facilitate the introduction of handover procedure in CELL_FACH in a later release

The following changes are proposed in r1 of this CR:

- Rephrasing of resumption upon handover failure into continue original connection
- Clarification of start conditions for T309
- Correction of inconsistency between tabular and ASN.1 for the HANDOVER FROM UTRAN COMMAND message: the size of the RAB list is clarified to be limited to 1 for all system types used in this version.
- Correction of inconsistency between tabular and ASN.1 for the System Specific Capability list in the RRC CONNECTION SETUP COMPLETE, SECURITY MODE COMMAND and UE CAPABILITY INFORMATION: To align with ASN.1, the use of constant “maxSystemCapability” (=16) is replaced with the constant “maxInterSysMessages” (=4). A clarification is also added that the only 4 system specific capabilities can be requested by the IE “Capability update requirement”, since the size of that list can be 16 (also in ASN.1). Any exceeding items shall be ignored by the UE.
- Correction of inconsistency between tabular and ASN.1 concerning the IE “Downlink DPCH info for each radio link Post” (10.3.6.22): The definition of Code number and spreading factor is aligned to ASN:1 in the same way as done for the IE “Downlink DPCH info for each radio link” (10.3.6.21).
- In the ASN.1 the IE RAB-InfoPost has been removed since this IE only applies in the preconfiguration case, in which it is already covered

Consequences if not approved: ⌘

The following main problems are foreseen:

- Upon inter RAT cell change UTRAN may keep radio resources longer than needed or the UE may fail to return because UTRAN has already released the resources
- Interoperability problems due to missing specification of the Default DPCH offset value to be used upon inter RAT handover to UTRAN

Backwards compatibility analysis:

- Both the signalling and the required UE behaviour for the inter RAT handover procedure have been changed but this only affects the corrected function. If this correction is not performed, the handover interrupt time will be too long while there may also be interoperability problems
- The inter RAT cell change procedure was corrected to prevent that radio resources remain allocated for a long time.

Clauses affected: ⌘ 8.3.6.2, 8.3.6.3, 8.3.6.4a (new), 8.3.7.8a (new), 8.3.11.3, 8.3.11.4, 8.3.11.5, 8.5.15.1, 8.5.15.2, 8.5.15.4, 8.6.6.21, 8.6.7.5, 8.6.7.6, 10.2.15, 10.2.41, 10.2.43, 10.2.48.8.19, 10.2.56, 10.3.3.2, 10.3.4.7, 10.3.6.18, 10.3.6.22, 10.3.6.26, 10.3.7.23, 11, 13.1, 13.4.0, 14.13.1.1

Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	Changes as compared to the draft version presented at the R2#19 meeting are highlighted		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

8.3.6 Inter-RAT handover to UTRAN

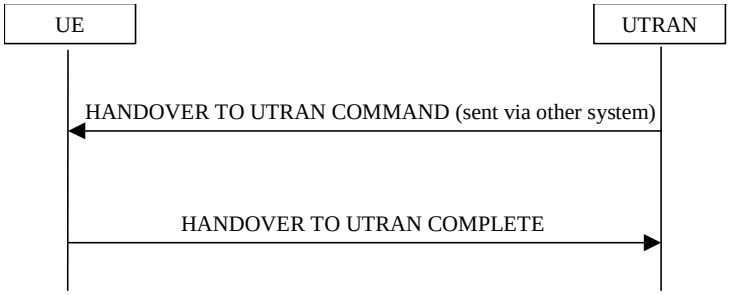

Figure 52: Inter-RAT handover to UTRAN, successful case

8.3.6.1 General

The purpose of the inter-RAT handover procedure is to, under the control of the network, transfer a connection between the UE and another radio access technology (e.g. GSM) to UTRAN.

8.3.6.2 Initiation

The procedure is initiated when a radio access technology other than UTRAN, e.g. GSM, using system specific procedures, orders the UE to make a handover to UTRAN.

A HANDOVER TO UTRAN COMMAND message is sent to the UE via the radio access technology from which inter-system handover is performed.

In case UTRAN decides to uses a predefined or default radio configuration that is stored in the UE, it should include the following information in the HANDOVER TO UTRAN COMMAND message.

- the IE "U-RNTI" to be assigned;
- the IE "Predefined configuration identity", to indicate which pre-defined configuration of RB, transport channel and physical channel parameters shall be used; or
- the IE "Default configuration mode" and IE "Default configuration identity", to indicate which default configuration of RB, transport channel and physical channel parameters shall be used;
- PhyCH information elements.

NOTE 1: When using a predefined or default configuration during handover to UTRAN, UTRAN can only assign values of IEs "U-RNTI" and "scrambling code" that are within the special subranges defined exclusively for this procedure. UTRAN may re- assign other values after completion of the handover procedure.

NOTE 2: When using a predefined or default configuration during handover to UTRAN, fewer IEs are signalled; when using this signalling option some parameters e.g. concerning compressed mode, DSCH, SSDT can not be configured. In this case, the corresponding functionality can not be activated immediately.

In case UTRAN does not use a predefined radio configuration that is stored in the UE, it should include the following information in the HANDOVER TO UTRAN COMMAND message.

- the IE "U-RNTI" to be assigned;
- the complete set of RB, TrCH and PhyCH information elements to be used.

8.3.6.3 Reception of HANDOVER TO UTRAN COMMAND message by the UE

The UE shall be able to receive a HANDOVER TO UTRAN COMMAND message and perform an inter-RAT handover, even if no prior UE measurements have been performed on the target UTRAN cell and/or frequency.

The UE shall act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following. The UE shall:

- store a U-RNTI value (32 bits), which is derived by the IEs "SRNC identity" (12 bits) and "S-RNTI 2" (10 bits) included in IE "U-RNTI-short". In order to produce a full size U-RNTI value, a full size "S-RNTI" (20 bits) shall be derived by padding the IE "S-RNTI 2" with 10 zero bits in the most significant positions; and

- initialise the variable ESTABLISHED_SIGNALLING_CONNECTIONS with the signalling connections that remains after the handover according to the specifications of the source RAT;

- if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Predefined configuration":

  - initiate the radio bearer and transport channel configuration in accordance with the predefined parameters identified by the IE "Predefined configuration identity";

  - initiate the physical channels in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity" and the received physical channel information elements;

  - store information about the established radio access bearers and radio bearers according to the IE "Predefined configuration identity"; and

  - set the IE "RAB Info Post" in the variable ESTABLISHED_RABS and the IE "Re-establishment timer" in the IE "RAB Info" in the variable ESTABLISHED_RABS to "useT314";

- if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Default configuration":

  - initiate the radio bearer and transport channel configuration in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity";

  - initiate the physical channels in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity" and the received physical channel information elements;

NOTE IE "Default configuration mode" specifies whether the FDD or TDD version of the default configuration shall be used

  - set the IE "RAB Info Post" in the variable ESTABLISHED_RABS and the IE "Re-establishment timer" in the IE "RAB Info" in the variable ESTABLISHED_RABS to "useT314";

- if IE "Specification mode" is set to "Preconfiguration":

  - use the following values for parameters that are neither signalled within the HANDOVER TO UTRAN COMPLETE message nor included within pre- defined or default configuration:

    - 0 dB for the power offset $P_{Pilot\text{-}DPDCH}$ bearer in FDD;

    - calculate the Default DPCH Offset Value using the following formula:

      in FDD: Default DPCH Offset Value = (SRNTI 2 mod 600) * 512,

      in TDD: Default DPCH Offset Value = (SRNTI 2 mod 7)

    - handle the above Default DPCH Offset Value as if an IE with that value was included in the message, as specified in 8.6.6.21.

- if IE "Specification mode" is set to "Complete specification":

  - initiate the radio bearer, transport channel and physical channel configuration in accordance with the received radio bearer, transport channel and physical channel information elements;

- perform an open loop estimation to determine the UL transmission power according to subclause 8.5.3;

- apply the same ciphering (ciphered/unciphered, algorithm) as prior to inter--RAT handover, unless a change of algorithm is requested by means of the "Ciphering algorithm".

If the UE succeeds in establishing the connection to UTRAN, it shall:

- transmit a HANDOVER TO UTRAN COMPLETE message on the uplink DCCH;
- when the HANDOVER TO UTRAN COMPLETE message has been submitted to lower layers for transmission,:
  - if the IE "Transport format combination subset" was not included in the HANDOVER TO UTRAN COMMAND message or in the predefined parameters;
    - set the IE "Current TFC subset" in the variable TFS_SUBSET to "Full transport format combination set";
  - set the IE "Status" in the variable CIPHERING_STATUS to "Not started";
  - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE;
  - set the IE "Status" in the variable INTEGRITY_ PROTECTION_INFO to "Not started";
  - set the IE "Historical status" in the variable INTEGRITY_ PROTECTION_INFO to "Never been active";
  - set the IE "Reconfiguration" in the variable INTEGRITY_ PROTECTION _INFO to FALSE;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - set the variable ORDERED_RECONFIGURATION to FALSE;
  - set the variable FAILURE_INDICATOR to FALSE;
  - set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
  - set the variable INVALID_CONFIGURATION to FALSE;
  - set the variable PROTOCOL_ERROR_INDICATOR, TFC_SUBSET to FALSE;
  - set the variable PROTOCOL_ERROR_REJECT to FALSE;
  - set the variable TGSN_REPORTED to FALSE;
  - set the variable UNSUPPORTED_CONFIGURATION to FALSE;
  - clear all optional IEs in all variables, except those optional IEs that are set in this procedure;
- And the procedure ends.

8.3.6.4 Invalid Handover to UTRAN command message

If the UE receives a HANDOVER TO UTRAN COMMAND message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling according to the source radio access technology. The UE shall:

- if allowed by the source RAT:
  - transmit an RRC STATUS message to the source radio access technology; and
  - include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- Other details may be provided in the specifications related to the source radio access technology.

8.3.6.4a Unsupported configuration in HANDOVER TO UTRAN COMMAND message

If the UE does not support the configuration included in the HANDOVER TO UTRAN COMMAND message e.g. the message includes a pre- defined configuration that the UE hasn't stored, the UE shall:

- continues the connection using the other radio access technology; and

- indicate the failure to the other radio access technology.

8.3.6.5 UE fails to perform handover

If the UE does not succeed in establishing the connection to UTRAN, it shall:

- terminate the procedure including release of the associated resources;
- resume the connection used before the handover; and
- indicate the failure to the other radio access technology.

Upon receiving an indication about the failure from the other radio access technology, UTRAN should release the associated resources and the context information concerning this UE.

8.3.6.6 Reception of message HANDOVER TO UTRAN COMPLETE by the UTRAN

Upon receiving a HANDOVER TO UTRAN COMPLETE message, UTRAN should consider the inter-RAT handover procedure as having been completed successfully and indicate this to the Core Network.

8.3.7 Inter-RAT handover from UTRAN

Figure 53: Inter-RAT handover from UTRAN, successful case

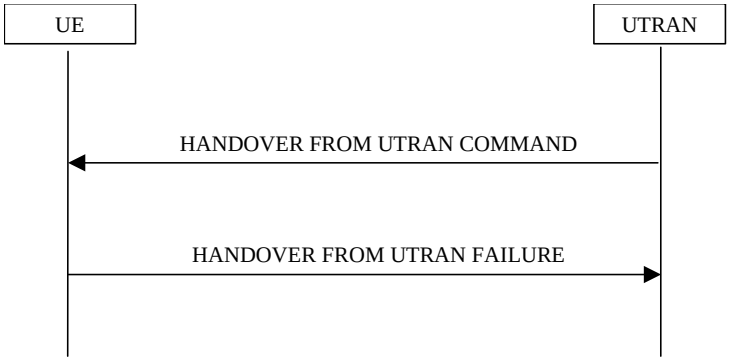

Figure 54: Inter-RAT handover from UTRAN, failure case

8.3.7.1 General

The purpose of the inter-RAT handover procedure is to, under the control of the network, transfer a connection between the UE and UTRAN to another radio access technology (e.g. GSM). This procedure may be used in CELL_DCH state.

NOTE: This procedure is applicable to CS domain service.

8.3.7.2 Initiation

The procedure is initiated when UTRAN orders a UE in CELL_DCH state, to make a handover to a radio access technology other than UTRAN, e.g. GSM.

To initiate the procedure, UTRAN sends a HANDOVER FROM UTRAN COMMAND message.

8.3.7.3 Reception of a HANDOVER FROM UTRAN COMMAND message by the UE

The UE shall be able to receive a HANDOVER FROM UTRAN COMMAND message and perform an inter-RAT handover, even if no prior UE measurements have been performed on the target cell.

The UE shall:

- establish the connection to the target radio access technology, by using the contents of the IE "Inter-RAT message". This IE contains a message specified in another standard, as indicated by the IE "System type", and carries information about the candidate/ target cell identifier(s) and radio parameters relevant for the target radio access technology. The correspondence between the value of the IE "System type", the standard to apply and the message contained within IE "Inter RAT message" is shown in the following:

Value of the IE "System type"	Standard to apply	Inter RAT Message
GSM (DCS 1800 band used)	GSM TS 04.18, version 8.5.0 or later	HANDOVER COMMAND
GSM (PCS 1900 band used)	GSM TS 04.18, version 8.5.0 or later	HANDOVER COMMAND
cdma2000	TIA/EIA/IS-2000 or later, TIA/EIA/IS-833 or later, TIA/EIQ/IS-834 or later	

- if the IE "System type" has the value "GSM (DCS 1800 band used)":
  - set the BAND_INDICATOR [26] to "ARFCN indicates 1800 band";
- if the IE "System type" has the value " GSM (PCS 1900 band used)":
  - set the BAND_INDICATOR [26] to "ARFCN indicates 1900 band";
- apply the "Inter RAT Message" according to the "standard to apply" in the table above.
- in case one or more IEs "RAB info" is included in the HANDOVER FROM UTRAN COMMAND message:
  - connect upper layer entities corresponding to indicated RABs to the radio resources indicated in the inter-RAT message;

NOTE: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification.

8.3.7.4 Successful completion of the inter-RAT handover

Upon successfully completing the handover, UTRAN should release the radio connection and remove all context information for the concerned UE.

NOTE: The release of the UMTS radio resources is initiated from the target RAT.

8.3.7.5 UE fails to complete requested handover

If the UE does not succeed in establishing the connection to the target radio access technology, it shall:

- revert back to the UTRA configuration;
- establish the UTRA physical channel(s) used at the time for reception of HANDOVER FROM UTRAN COMMAND;
- if the UE does not succeed to establish the UTRA physical channel(s):
  - select a suitable UTRA cell according to [4];
  - perform a cell update procedure according to subclause 8.3.1 with cause "Radio link failure";

- when the cell update procedure has completed successfully:
  - proceed as below;

- transmit the HANDOVER FROM UTRAN FAILURE message setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "physical channel failure";
- When the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layer for transmission:
  - The procedure ends.

8.3.7.6 Invalid HANDOVER FROM UTRAN COMMAND message

If the IE "Inter-RAT message" received within the HANDOVER FROM UTRAN COMMAND message does not include a valid inter RAT handover message in accordance with the protocol specifications for the target RAT, the UE shall perform procedure specific error handling as follows. The UE shall:

- set the IE "failure cause" to the cause value "Inter-RAT protocol error";
- include the IE "Inter-RAT message" in case the target RAT provides further details about the inter RAT protocol error;
- transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;
- when the transmission of the HANDOVER FROM UTRAN FAILURE message has been confirmed by RLC:
  - continue with any ongoing processes and procedures as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;
  - And the procedure ends.

If the HANDOVER FROM UTRAN COMMAND message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- set the IE "RRC transaction identifier" in the HANDOVER FROM UTRAN FAILURE message to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- transmit a HANDOVER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;
- when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;
  - And the procedure ends.

8.3.7.7 Reception of an HANDOVER FROM UTRAN FAILURE message by UTRAN

Upon receiving an HANDOVER FROM UTRAN FAILURE message, UTRAN may initiate the release the resources in the target radio access technology.

8.3.7.8 Unsupported configuration in HANDOVER FROM UTRAN COMMAND message

If the UTRAN instructs the UE to perform a non-supported handover scenario, e.g. multiple RAB or to use a non-supported configuration, the UE shall:

- transmit a HANDOVER FROM UTRAN FAILURE message, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "configuration unacceptable";
  - when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
    - resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;
    - And the procedure ends.

8.3.7.8a Reception of HANDOVER FROM UTRAN COMMAND message by UE in CELL_FACH

If the UE receives HANDOVER FROM UTRAN COMMAND while in CELL_FACH, the UE shall:

- transmit a HANDOVER FROM UTRAN FAILURE message, setting the information elements as specified below:
  - include the IE "RRC transaction identifier"; and
  - set it to the value of "RRC transaction identifier" in the entry for the HANDOVER FROM UTRAN COMMAND message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
  - set the IE "Inter-RAT change failure" to "protocol error", include IE “Protocol error information” and set the value of IE “Protocol error cause” to “Message not compatible with receiver state”;
  - when the HANDOVER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
    - resume normal operation as if the invalid HANDOVER FROM UTRAN COMMAND message has not been received;
    - And the procedure ends.

8.3.11 Inter-RAT cell change order from UTRAN

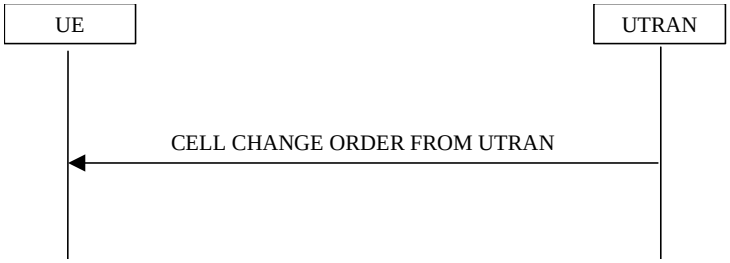

Figure 55: Inter–RAT cell change order from UTRAN

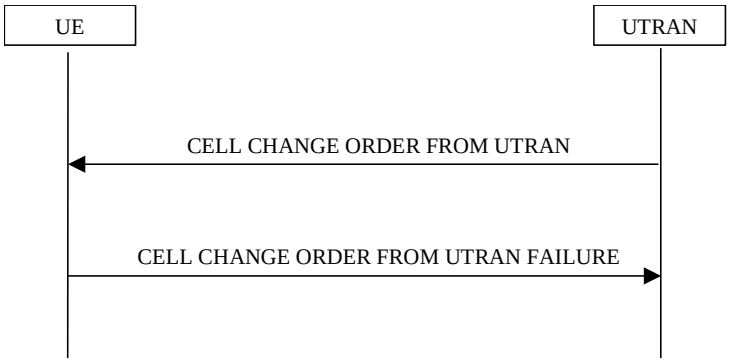

Figure 55a: Inter-RAT cell change order from UTRAN, failure case

8.3.11.1 General

The purpose of the inter-RAT cell change order procedure is to transfer, under the control of the network, a connection between the UE and UTRAN to another radio access technology (e.g. GSM). This procedure may be used in CELL_DCH and CELL_FACH state.

NOTE: This procedure is applicable for services in the PS domain.

8.3.11.2 Initiation

The procedure is initiated when UTRAN orders a UE in CELL_DCH or CELL_FACH state, to make a cell change to a radio access technology other than UTRAN, e.g. GSM.

To initiate the procedure, UTRAN sends a CELL CHANGE ORDER FROM UTRAN message.

8.3.11.3 Reception of an CELL CHANGE ORDER FROM UTRAN message by the UE

The UE shall be able to receive a CELL CHANGE ORDER FROM UTRAN message and perform a cell change order to another RAT, even if no prior UE measurements have been performed on the target cell.

The UE shall:

- start timer T309; and
- establish the connection to the other radio access technology, as specified within IE "Target cell info". This IE specifies the target cell identity, in accordance with the specifications for that other RAT. In case the target cell is a GSM/ GPRS cell, IE "Target cell info" may also include IE "NC mode", which specifies the cell selection mode to be applied in the target cell; and
- if IE "NC mode" is not included in the CELL CHANGE ORDER FROM UTRAN:
  - retrieve it from the target cell as specified in [43];
  - act upon IE "NC mode" as specified in [43].

- if one or more IEs "RAB info" are included in the CELL CHANGE ORDER FROM UTRAN message:
  - connect the upper layer entities corresponding to indicated RABs to the radio resources offered by the target RAT;

NOTE: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification. In case of GSM/GPRS proceed according to the procedure Network control cell reselection procedure as specified in [44].

8.3.11.4 Successful completion of the cell change order

Upon succesful completion of the cell change order the UE shall stop timer T309.

Upon indication of the UE having successfully completed the cell change order, UTRAN should release the radio connection and remove all context information for the concerned UE.

NOTE: The release of the UMTS radio resources is initiated from another RAT.

8.3.11.5 Expiry of timer T309 or UE fails to complete requested cell change order

If timer T309 expires prior to the succesful establishment of a connection to the target RAT, or if the establishment of the connection to the other RAT failed due to other reasons e.g. (random) access failure, rejection due to lack of resources, the UE shall:

~~If the UE does not succeed in establishing a connection to the target RAT, the UE shall:~~

- if it received the CELL CHANGE ORDER FROM UTRAN message in state CELL_DCH:
  - revert back to the UTRA configuration;
  - establish the UTRA physical channel(s) used at the time for reception of CELL CHANGE ORDER FROM UTRAN;
  - if the UE does not succeed in establishing the UTRA physical channel(s):
    - select a suitable UTRA cell according to [4];
    - perform a cell update procedure according to subclause 8.3.1 with cause "Radio link failure";
    - when the cell update procedure has completed successfully:
      - proceed as below;
  - transmit the CELL CHANGE ORDER FROM UTRAN FAILURE message setting the information elements as specified below:
    - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - clear that entry;
    - set the IE "Inter-RAT change failure" to "physical channel failure";
  - When the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layer for transmission, the procedure ends.
- if the UE receives the CELL CHANGE ORDER FROM UTRAN message in CELL_FACH state:
  - revert to the cell it was camped on at the reception of the CELL CHANGE ORDER FROM UTRAN message;
  - if the UE is unable to return to this cell:
    - select a suitable UTRA cell according to [4];

- initiate the cell update procedure according to subclause 8.3.1 using the cause "cell re-selection";
- when the cell update procedure completed successfully:
- proceed as below;

- transmit the CELL CHANGE ORDER FROM UTRAN FAILURE message setting the information elements as specified below:
- include the IE "RRC transaction identifier"; and
- set it to the value of "RRC transaction identifier" in the entry for the CELL CHANGE ORDER FROM UTRAN message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "Inter-RAT change failure" to "physical channel failure";
- When the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layer for transmission:
- The procedure ends.

8.3.11.6 Unsupported configuration in CELL CHANGE ORDER FROM UTRAN message

If the UTRAN instructs the UE to perform a non-supported cell change order scenario e.g. multiple RAB or to use a non-supported configuration, the UE shall:

- transmit a CELL CHANGE ORDER FROM UTRAN FAILURE message, setting the information elements as specified below:
- include the IE "RRC transaction identifier"; and
- set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "Inter-RAT change failure" to "configuration unacceptable";
- when the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
- resume normal operation as if the CELL CHANGE ORDER FROM UTRAN message has not been received;
- And the procedure ends.

8.3.11.7 Invalid CELL CHANGE ORDER FROM UTRAN message

If the CELL CHANGE ORDER FROM UTRAN message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- set the IE "RRC transaction identifier" in the CELL CHANGE ORDER FROM UTRAN FAILURE message to the value of "RRC transaction identifier" in the entry for the CELL CHANGE ORDER FROM UTRAN message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- clear that entry;
- set the IE "failure cause" to the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;

- transmit a CELL CHANGE ORDER FROM UTRAN FAILURE message on the uplink DCCH using AM RLC;
- when the CELL CHANGE ORDER FROM UTRAN FAILURE message has been submitted to lower layers for transmission:
    - resume normal operation as if the invalid CELL CHANGE ORDER FROM UTRAN message has not been received;
    - And the procedure ends.

8.5.15 CFN calculation

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*38400 - DOFF~~*512~~) div 38400) mod 256

- for TDD:

  CFN = (SFN - DOFF) mod 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:

- if IE "Timing indication" has the value "initialise" (i.e. timing re-initialised hard handover):
  - if IE "CFN-targetSFN frame offset" is not included:
    - 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;
    - set the CFN according to the following formula:
      - for FDD:
        - CFN = ((SFN*38400 - DOFF~~*512~~) div 38400) mod 256;
      - for TDD:
        - CFN = (SFN - DOFF) mod 256;
  - if IE "CFN-targetSFN frame offset" is included in the message causing the UE to perform a timing re-initialised hard handover, CFN shall be calculated according to the following formula:
    - for FDD:
      - CFNnew = (CFNold*38400+COFF*38400 -DOFF~~*512~~) div 38400) mod 256
    - for TDD:
      - CFNnew = (CFNold+COFF - DOFF) mod 256
        - where COFF is the value of "CFN-targetSFN frame offset".

NOTE: CFN-targetSFN frame offset = (TargetSFN-CFN)mod256

- 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

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 mod 256

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):

~~Initialisation for CELL_DCH state after intersystem handover:~~

- read SFN on target cell and set the CFN ~~shall be calculated~~ according to the following formula:
  - for FDD:

    CFN = ((SFN*38400 - DOFF~~*512~~) div 38400) mod 256
  - for TDD:

    CFN = (SFN - DOFF) mod 256

8.6.6.21 Default DPCH Offset Value

The UE shall:

- if the IE "Default DPCH Offset Value" is included:
  - use its value to determine Frame Offset and Chip Offset from the SFN timing in a cell;
  - store the received value in variable DOFF.

  if the IE "Default DPCH Offset Value" is not included:
  - use the previously received value stored in variable DOFF. If there is no previously received value stored in DOFF, the UE should use the value 0.

After transition from CELL_DCH state to other states, the UE shall:

- erase the value stored in variable DOFF.

8.6.7.5 Inter-RAT measurement quantity

If the IE "Inter-RAT measurement quantity" is received in a MEASUREMENT CONTROL message and CHOICE system is GSM, the UE shall:

- if IE "BSIC verification required" is set to "required", for cells that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", and that has a "verified" BSIC:
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if IE "BSIC verification required" is set to "not required", for cells that match any of the BCCH ARFCN in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", regardless if the BSIC is "verified" or "non-verified":
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if the IE "Measurement quantity" is set to "pathloss"; ~~and~~
- ~~for any inter-RAT cell indicated by the IE "Cells for measurement", the IE "Output power" in the inter-RAT cell info list in the variable CELL_INFO_LIST is not present:~~
  - set the variable CONFIGURATION_INCOMPLETE to TRUE.

NOTE: The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

8.6.7.6 Inter-RAT reporting quantity

If the IE "Inter-RAT reporting quantity" is received by the UE, the UE shall:

- store the content of the IE to the variable MEASUREMENT_IDENTITY.

If the IE "Inter-RAT measurement quantity" is received and CHOICE system is GSM, the UE shall check each quantity in the GSM choice. The UE shall include measured results in MEASUREMENT REPORT as specified in the IE "Inter-RAT reporting quantity" with the following restrictions:

- if the UE has not confirmed the BSIC of the measured cell:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.
- if the UE has confirmed the BSIC of the measured cell, then:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" nor "BSIC re-confirmation" is active, the UE is not required to include the "BSIC" nor "Observed time difference to GSM cell" in the IE "Measured results", when a MEASUREMENT REPORT is triggered.
- if IE "Pathloss" is set to "TRUE":
  - set the variable CONFIGURATION_INCOMPLETE to TRUE.
  - ~~include optional IE "Pathloss" with a value set to the measured pathloss to that GSM cell in IE "Inter-RAT measured results list";~~
- if IE "Observed time difference to GSM cell" is set to "TRUE":
  - include optional IE "Observed time difference to GSM cell" with the value set to the time difference to that GSM cell for the GSM cells that have a BSIC that is "verified", and that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list". Observed time difference to GSM cells with "non-verified" BSIC shall not be included;

- if IE "GSM Carrier RSSI" is set to "TRUE":
    - include optional IE "GSM Carrier RSSI" with a value set to the measured RXLEV to that GSM cell in IE "Inter-RAT measured results list";
- if the BSIC of reported GSM cell is "verified":
    - set the CHOICE BSIC to "Verified BSIC" and IE "inter-RAT cell id" to the value that GSM cell had in the IE "Inter-RAT cell info list";
- if the BSIC of reported GSM cell is "non-verified":
    - set the CHOICE BSIC to "Non verified BSIC" and the IE "BCCH ARFCN" to the value of that GSM cells ARFCN;

The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

10.2.15 HANDOVER FROM UTRAN COMMAND

This message is used for handover from UMTS to another system e.g. GSM. One or several messages from the other system can be included in the Inter-RAT message information element in this message. These messages are structured and coded according to that systems specification.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
RB information elements				
RAB information list	OP	1 to <maxRABsetup>		For each RAB to be handed over. In this version, the maximum size of the list of 1 shall be applied for all system types in the IE "Inter-RAT message".
>RAB info	MP		RAB info 10.3.4.8	
Other information elements				
Inter-RAT message	MP		Inter-RAT message 10.3.8.8	

10.2.41 RRC CONNECTION SETUP COMPLETE

This message confirms the establishment of the RRC Connection by the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
START list	MP	1 to <maxCNdomains>		START [40] values for all CN domains.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	START value to be used in this CN domain.
UE radio access capability	OP		UE radio access capability 10.3.3.42	
Other information elements				
UE system specific capability	OP	1 to <maxSystemCapabilitymaxInterSysMessages>		
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	

10.2.43 SECURITY MODE COMMAND

This message is sent by UTRAN to start or reconfigure ciphering and/or integrity protection parameters.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN to UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	MP		Integrity check info 10.3.3.16	
Security capability	MP		Security capability 10.3.3.37	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	Only present if ciphering shall be controlled
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	Only present if integrity protection shall be controlled
CN Information elements				
CN domain identity	MP		CN domain identity 10.3.1.1	Indicates which cipher and integrity protection keys are applicable
Other information elements				
UE system specific security capability	CH	1 to <maxInterSysMessagesmaxSystemCapability>		This IE is included if the IE "Inter-RAT UE radio access capability" was included in RRC CONNECTION SETUP COMPLETE message
Inter-RAT UE security capability	MP		Inter-RAT UE security capability 10.3.8.8a	

10.2.48.8.19 System Information Block type 16

The system information block type 16 contains radio bearer, transport channel and physical channel parameters to be stored by UE in idle and connected mode for use during handover to UTRAN.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~**UE information elements**~~				
~~Re-establishment timer~~	~~MP~~		~~Re-establishment timer 10.3.3.30~~	
RB information elements				
Predefined RB configuration	MP		Predefined RB configuration 10.3.4.7	
TrCH Information Elements				
Predefined TrCH configuration	MP		Predefined TrCH configuration 10.3.5.9	
PhyCH Information Elements				
Predefined PhyCH configuration	MP		Predefined PhyCH configuration 10.3.6.56	

10.2.56 UE CAPABILITY INFORMATION

This message is sent by UE to convey UE specific capability information to the UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
RRC transaction identifier	OP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
UE radio access capability	OP		UE radio access capability 10.3.3.42	
Other information elements				
UE system specific capability	OP	1 to <maxInterSysMessagesmaxSystemCapability>		
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability10.3.8.7	

10.3.3.2 Capability Update Requirement

This IE indicates to the UE which specific capabilities to transfer to the network.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
UE radio access FDD capability update requirement	MP		Boolean	TRUE indicates update required	
UE radio access 3.84Mcps TDD capability update requirement	MP		Boolean	TRUE indicates update required	Name changed in REL-4
UE radio access 1.28Mcps TDD capability update requirement	MP		Boolean	TRUE indicates update required	REL-4
System specific capability update requirement list	OP	1 to <maxSystemCapability>		In this version, a maximum size of 4 of the list shall be applied and any items after the 4th item in the list shall be ignored.	
>System specific capability update requirement	MP		Enumerated (GSM)		

Default value is:

"UE radio capability FDD update requirement" = false

"UE radio capability 3.84Mcps TDD update requirement" = false

"UE radio capability 1.28Mcps TDD update requirement" = false

"System specific capability update requirement" not present.

10.3.4.7 Predefined RB configuration

This information element concerns a pre- defined configuration of radio bearer parameters

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE information elements				
Re-establishment timer	MP		Re-establishment timer 10.3.3.30	Only one RAB supported
Signalling radio bearer information				
Signalling RB information to setup List	MP	1 to <maxSRBsetup>		For each signalling radio bearer
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
RB information				Only one RAB supported
RB information to setup list	MP	1 to <maxRBcount>		
>RB information to setup	MP		RB information to setup 10.3.4.20	

10.3.6.18 Downlink DPCH info common for all RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timing Indication	MP		Enumerated(Initialise, Maintain)	(Note1)
CFN-targetSFN frame offset	CV TimInd		Integer(0..255)	In frame
CHOICE *mode*	MP			
>FDD				
>>Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	
>>Power offset $P_{Pilot-DPDCH}$	MP		Integer(0..24)	Power offset equals P_{Pilot} - P_{DPDCH}, range 0..6 dB, in steps of 0.25 dB
>>Downlink rate matching restriction information	OP		Downlink rate matching restriction information 10.3.6.31	If this IE is set to "absent", no Transport CH is restricted in TFI.
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	
>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>CHOICE *SF*	MP			
>>>SF = 256				
>>>>Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>>SF = 128				
>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>>Otherwise				(no data)
>TDD				
>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info

CHOICE *SF*	Condition under which the given *SF* is chosen
SF=128	"Spreading factor" is set to 128
SF=256	"Spreading factor" is set to 256
Otherwise	"Spreading factor" is set to a value distinct from 128 and 256

Condition	Explanation
TimInd	This IE is OPTIONAL if the IE "Timing Indication" is set to "Initialise". Otherwise it is absent.

NOTE 1: Within the HANDOVER TO UTRAN COMMAND message, only value “initialise” is applicable.

10.3.6.22 Downlink DPCH info for each RL Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumber with "code number" in ASN.1
>>Code number	MP		Integer(0.. Spreading factor - 1maxCodeNb)	
>>TPC combination index	MP		TPC combination index 10.3.6.85	
>TDD				
>>Downlink DPCH timeslots and codes	MP		Downlink Timeslots and Codes 10.3.6.32	

10.3.6.26 Downlink information common for all radio links Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Pre 10.3.6.20	
~~Default DPCH Offset Value~~	~~OP~~		~~Default DPCH Offset Value, 10.3.6.16~~	

10.3.7.23 Inter-RAT cell info list

Contains the measurement object information for an inter-RAT measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Inter-RAT cell removal	MP			
>Remove all inter-RAT cells				No data
>Remove some inter-RAT cells				
>>Removed inter-RAT cells	MP	1 to <maxCellMeas>		
>>>Inter-RAT cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no inter-RAT cells				
New inter-RAT cells	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	MD		Integer(0 .. <maxCellMeas> - 1)	
>CHOICE *Radio Access Technology*	MP			
>>GSM				
>>>Cell individual offset	MD		Integer (-50..50)	In dB Default value is 0 dB Used to offset measured quantity value
>>>Cell selection and re-selection info	CV-*BCHopt*		Cell selection and re-selection info for SIB11/12 10.3.2.4	Only when sent in system information. If HCS is not used and all the parameters in cell selection and re-selection info are default values, this IE is absent.
>>>BSIC	MP		BSIC 10.3.8.2	
>>>Band indicator	MP		Enumerated (DCS 1800 band used, PCS 1900 band used)	Indicates how to interpret the BCCH ARFCN
>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
~~>>>Output power~~	~~OP~~			
>>IS-2000				
>>>System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Subclause 3. 7.3.3.2.27, *Candidate Frequency Neighbour List Message*
Cell for measurement	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	MP		Integer(0 .. <MaxInterCells>)	

```
-- **************************************************
--
-- HANDOVER TO UTRAN COMMAND
--
-- **************************************************


HandoverToUTRANCommand-r3 ::= CHOICE {
    r3                              SEQUENCE {
        handoverToUTRANCommand-r3       HandoverToUTRANCommand-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

HandoverToUTRANCommand-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        activationTime                  ActivationTime                      OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
        rab-Info                        RAB-Info-Post,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                srb-InformationSetupList        SRB-InformationSetupList,
                rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
                ul-CommonTransChInfo            UL-CommonTransChInfo,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
                ul-DPCH-Info                    UL-DPCH-Info,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        dl-PDSCH-Information            DL-PDSCH-Information OPTIONAL,
                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation,
                dl-InformationPerRL-List        DL-InformationPerRL-List,
                frequencyInfo                   FrequencyInfo
            },
            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
                    }
                },
                rab-Info                        RAB-Info-Post       OPTIONAL,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostFDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL-List        DL-InformationPerRL-ListPostFDD,
                        frequencyInfo                   FrequencyInfoFDD
                    },
                    tdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostTDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL             DL-InformationPerRL-PostTDD,
                        frequencyInfo                   FrequencyInfoTDD,
                        primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                    }

                }
            }
        },
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power
}
```

11.3 Information element definitions

```
<Cut untill next modified section>

-- **************************************************
--
--     RADIO BEARER INFORMATION ELEMENTS (10.3.4)
--
-- **************************************************

<Cut untill next modified section>

PredefinedRB-Configuration ::=      SEQUENCE {
    re-EstablishmentTimer               Re-EstablishmentTimer,
    srb-InformationList                 SRB-InformationSetupList,
    rb-InformationList                  RB-InformationSetupList
}

PreDefRadioConfiguration ::=        SEQUENCE {
    -- User equipment IEs
    re-EstablishmentTimer               Re-EstablishmentTimer,
    -- Radio bearer IEs
    predefinedRB-Configuration          PredefinedRB-Configuration,
    -- Transport channel IEs
    preDefTransChConfiguration          PreDefTransChConfiguration,
    -- Physical channel IEs
    preDefPhyChConfiguration            PreDefPhyChConfiguration
}
```

```
-- **************************************************
--
--     PHYSICAL CHANNEL INFORMATION ELEMENTS (10.3.6)
--
-- **************************************************

<Cut untill next modified section>

DL-CommonInformation ::=            SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon          OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD  OPTIONAL,
            dpch-CompressedModeInfo             DPCH-CompressedModeInfo     OPTIONAL,
            tx-DiversityMode                    TX-DiversityMode            OPTIONAL,
            ssdt-Information                    SSDT-Information            OPTIONAL
        },
        tdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD  OPTIONAL
        }
    }
}

DL-CommonInformationPost ::=        SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPost
}

DL-CommonInformationPredef ::=      SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPredef    OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD
        },
        tdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD
        }
    }
}
```

```
-- ************************************************
--
--     MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- ************************************************

<Cut untill next modified section>

-- **TODO**, not defined yet
GSM-OutputPower ::=                 SEQUENCE {
}

<Cut untill next modified section>

NewInterRATCell ::=             SEQUENCE {
    interRATCellID                      InterRATCellID          OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
            interRATCellIndividualOffset        InterRATCellIndividualOffset,
            bsic                                BSIC,
            band-Indicator                      Band-Indicator,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPowerdummy                        GSM-OutputPowerNULL             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare1                              NULL,
        spare2                              NULL
    }
}

NewInterRATCell-HCS ::=             SEQUENCE {
    interRATCellID                      InterRATCellID              OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
            interRATCellIndividualOffset        InterRATCellIndividualOffset,
            bsic                                BSIC,
            band-Indicator                      Band-Indicator,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPowerdummy                        GSM-OutputPowerNULL             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare1                              NULL,
        spare2                              NULL
    }
}
```

13.1 Timers for UE

Timer	Start	Stop	At expiry
T300	Transmission of RRC CONNECTION REQUEST	Reception of RRC CONNECTION SETUP	Retransmit RRC CONNECTION REQUEST if V300 =< N300, else go to Idle mode
T302	Transmission of CELL UPDATE/URA UPDATE	Reception of CELL UPDATE CONFIRM/URA UPDATE CONFIRM	Retransmit CELL UPDATE/URA UPDATE if V302 =< N302, else, go to Idle mode
T304	Transmission of UE CAPABILITY INFORMATION	Reception of UE CAPABILITY INFORMATION CONFIRM	Retransmit UE CAPABILITY INFORMATION if V304 =< N304, else initiate a cell update procedure
T305	Entering CELL_FACH or URA_PCH or CELL_PCH state. Reception of CELL UDPATE CONFIRM/URA UPDATE CONFIRM.	Entering another state.	Transmit CELL UPDATE if T307 is not activated.
T307	When the timer T305 has expired and the UE detects "out of service area".	When the UE detects "in service area".	Transit to idle mode
T308	Transmission of RRC CONNECTION RELEASE COMPLETE	Not stopped	Transmit RRC CONNECTION RELEASE COMPLETE if V308 <=N308, else go to idle mode.
T309	Upon reselection of a cell belonging to another radio access system from connected mode, OR Reception of CELL CHANGE ORDER FROM UTRAN message	Successful establishment of a connection in the new cell	Resume the connection to UTRAN
T310	Transmission of PUSCH CAPACITY REQUEST	Reception of PHYSICAL SHARED CHANNEL ALLOCATION	Transmit PUSCH CAPACITY REQUEST if V310 =< N310, else procedure stops.
T311	Reception of PHYSICAL SHARED CHANNEL ALLOCATION message with the CHOICE "PUSCH allocation" set to "PUSCH allocation pending".	Reception of PHYSICAL SHARED CHANNEL ALLOCATION message with CHOICE "PUSCH allocation" set to "PUSCH allocation assignment".	UE may initiate a PUSCH capacity request procedure.
T312	When the UE starts to establish dedicated CH	When the UE detects consecutive N312 "in sync" indication from L1.	The criteria for physical channel establishment failure is fulfilled
T313	When the UE detects consecutive N313 "out of sync" indication from L1.	When the UE detects consecutive N315 "in sync" indication from L1.	The criteria for Radio Link failure is fulfilled
T314	When the criteria for radio link failure are fulfilled. The timer is started only if radio bearer(s) that are associated with T314 exist.	When the Cell Update procedure has been completed.	See subclause 8.3.1.13

Timer	Start	Stop	At expiry
T315	When the criteria for radio link failure are fulfilled. The timer is started only if radio bearer(s) that are associated with T315 exist.	When the Cell Update procedure has been completed.	See subclause 8.3.1.14
T316	When the UE detects "out of service area" in URA_PCH or CELL_PCH state	When the UE detects "in service area".	Initiate cell update procedure
T317	When the T316 expires and the UE detects "out of service area".	When the UE detects "in service area".	Transit to idle mode

13.4.0 CELL INFO LIST

This variable contains cell information on intra-frequency, inter-frequency and inter-RAT cells, as received in messages System Information Block Type 11, System Information Block Type 12, and MEASUREMENT CONTROL.

The first position in Intra-frequency cell info list corresponds to Intra-frequency cell id), the second to Intra-frequency cell id 1, etc.

The first position in Inter-frequency cell info list corresponds to Inter-frequency cell id), the second to Inter-frequency cell id 1, etc.

The first position in Inter-RAT cell info list corresponds to Intra-frequency cell id), the second to Inter-RAT cell id 1, etc.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency cell info	MP	1..<maxCellMeas>		
>CHOICE *position status*	MP			
>>Occupied				
>>>Cell info	MP		Cell info 10.3.7.2	
>>Vacant				No data
Inter-frequency cell info	MP	1..<maxCellMeas>		
>CHOICE *position status*	MP			
>>Occupied				
>>>Frequency info	MP		Frequency info 10.3.6.36	
>>>Cell info	MP		Cell info 10.3.7.2	
>>Vacant				No data
Inter-RAT cell info	MP	1..<maxCellMeas>		
>CHOICE *position status*	MP			
>>Occupied				
>>>CHOICE *Radio Access Technology*				
>>>>GSM				
>>>>>Cell selection and re-selection info	MP		Cell selection and re-selection info for SIB11/12 10.3.2.4	
>>>>>BSIC	MP		BSIC 10.3.8.2	
>>>>>BCCH ARFCN	MP		Integer (0..1023)	[43]
~~>>>>>Output power~~	~~OP~~			
>>>>IS-2000				
>>>>>System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Subclause 3. 7.3.3.2.27, *Candidate Frequency Neighbour List Message*
>>Vacant				No data

14.13.1.1 Pre-defined configuration information

Another system may provide the UE with one or more pre- defined UTRAN configurations, comprising of radio bearer, transport channel and physical channel parameters. The UE shall store the information, and use it upon handover to UTRAN if requested to do so within the HANDOVER TO UTRAN COMMAND message. The pre- defined configuration information includes the following RRC information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB information elements				
Predefined radio configurations		1 to <maxPredefConfigCount>		
>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5	
>Predefined configuration value tag	OP		Predefined configuration value tag 10.3.4.6	
~~**UE information elements**~~				
~~Re-establishment timer~~	~~MP~~		~~Re-establishment timer 10.3.3.30~~	
RB information elements				
>Predefined RB configuration	MP		Predefined RB configuration 10.3.4.7	
TrCH Information Elements				
>Predefined TrCH configuration	MP		Predefined TrCH configuration 10.3.5.9	
PhyCH Information Elements				
>Predefined PhCH configuration	MP		Predefined PhyCH configuration 10.3.6.56	

Multi Bound	Explanation
MaxPredefConfigCount	Maximum number of predefined configurations

3GPP TSG-RAN WG2 Meeting #21
Busan, Korea, May 21st-25th, 2001

Tdoc R2-011248

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **761** ⌘ ev **r1** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Measurement corrections
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-05-24
Category:	⌘	**F**
Release:	⌘	R99

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)

Reason for change: ⌘

Ambiguous measurement handling need to be corrected.
Spelling errors.

A strict event description for all measurements is important for aligned UE behaviour and a possibility for the network to rely on measurement reports.

The current description of the traffic volume measurement is inconsistent and unclear.

Improvement of description and definition of units used

Events 1A and 1B are called respectively “A Primary CPICH enters the Reporting Range” and “A Primary CPICH leaves the Reporting Range”. However, in the definition of both events a constant parameter value is used (“R is the reporting range”), which could be mistaken for the dynamic reporting range, as defined by the formulas in section 14. This confusion originates from the merging of different events. As example, in section 14.1.2.2 it is stated: “the weakening cell must continuously stay below the reporting range for the given time period before the UE may send a measurement report”, which may conflict with the current definition of R.

The definition of Time To Trigger in the semantics description of the Tabular is not accurate (Indicates the period of time between the timing of event detection and the timing of sending Measurement Report). It conflicts with the correct definition included in section 14 (the report is triggered only after the conditions for the event have existed for the specified time-to-trigger)

Summary of change: ⌘

1. In section 8.4.1.3: it is clarified that if a MEASUREMENT CONTROL message is received by the UE with a “measurement command” set to “setup” while there is already a measurement stored in the variable

"MEASUREMENT_IDENTITY" for the "measurement identity" specified, the old information shall be overwritten. If the "measurement command" was set to "modify" while nothing was stored, the UE shall set the variable "CONFIGURATION_INCOMPLETE" to TRUE.

2. In section 8.4.1.7.1: it is clarified that when transition occurs from CELL_FACH to CELL_DCH, the UE shall only delete a measurement stored in the variable "MEASUREMENT_IDENTITY" with "measurement validity" set to "CELL_DCH" if a cell reselection was performed whilst out of CELL_DCH after the measurement was stored. Otherwise, the measurement information read from System Information Blocks 11 and 12 would be removed when going to CELL_DCH. Also clarify which IE give reporting criteria for CELL_DCH state.
3. In sections 8.4.1.7.2: a similar text as the one in 8.4.1.7.1 was added, to clarify that if a cell reselection has occurred out of CELL_DCH since they were stored the measurements with "measurement validity" set to "CELL_DCH" shall be removed.
4. In 8.4.1.7.4 the text on Inter-RAT measurements was corrected not to use measurement validity since this is not used for Inter-RAT measurements.
5. In section 8.4.1.8.1 and 8.4.1.9.1: "begin" has been replaced by "begin or continue" in the first bullets of the list, since the cells that the UE was monitoring in idle mode could be the same as the ones it monitors in CELL_FACH.
6. In 10.3.7.47 a Note was removed that is currently present in 10.3.7.40 already.
7. Some editorial changes were corrected (typing errors)
8. The behaviour of when to send measurement reports for the 1x events has been clarified according to semantics description text in the tabular. It has been re-written in the form of other parts of the specifications with normative text instead of relying on the figure representation.
9. Event 1x has been clarified with when the event can be re-triggered, different formulas to cover the hysteresis correct, inclusion of time to trigger in the description, inclusion of different parts into the reports. Also initial status on variables has been included to prevent a UE starting in CELL_DCH to send reports to give status that is known in the network.
10. Pathloss formulas in event 1a, b have been changed so that the smallest term dominates the sum instead of the largest.
11. It is clarified that the value closest to the measured value shall be reported in the traffic volume measurement.
12. It is clarified that the timer "pending time after trigger" is in ms and not in seconds.
13. The tabular for "traffic volume measurement quantity" is clarified
14. 8.4 Triggering event 1G for TDD cells is added.
15. 8.4.1.4a, 8.6.7.1 Spelling correction IE "failure cause" has value " Configuration incomplete";
16. 8.4.1.7.4 Spelling correction IE "UE state" has been assigned to value "all states except CELL_DCH"
17. 8.6.7.1 Correction: Traffic volume measurement is valid, if the IE "traffic volume measurement object" has been included, otherwise it is not.

18. 8.4.2.2 Spelling correction IE "Periodical reporting" is corrected to IE "Periodical reporting criteria"
19. 8.6.7.2 IE "Measured results on RACH" replaces IE "Measurement results on RACH"
20. 8.6.7.2 Filter Coefficient is defined in 10.3.7.9. Default value FC0 means no filtering is applied. Due to misleading explanation filter coefficient Default FC1 is used in ASN1. Therefore the explanation in 10.3.7.9 is modified and in ASN1 Code default value for FilterCoefficient DEFAULT FC0 is corrected accordingly.
21. 10.3.7.73 traffic volume measurement "object" instead of "objects"
22. The description of variables used in the formulas was improved.
23. In 14.1.2.2 in pathloss formula H_{1a} was corrected to H_{1b}
24. In 14.3.1.2 and 14.3.1.3 the reporting of information specific to TDD or FDD cells on non used frequency was removed, because it does not apply to these events
25. It is proposed to specify that R is the reporting range constant
26. It is proposed to remove the semantics description from the Tabular definition of Time To Trigger

Consequences if not approved: ⌘

The ambiguities in the text could result in unexpected UE behaviour.

Specification of events for measurements will be unclear resulting in different behaviour in different implementations of the UE.

Wrong parameters in ASN1 code, inconsistencies between text, tabular description and ASN1 Code might lead to misinterpretations. Requirements would remain ambiguous and may lead to erroneous implementations.

Units of measurement results used in formulas as variables remain undefined.

Backward compatibility:
1-8,11, 13-19, 21-26 Spelling errors and Correction to functionality where the specification was ambiguous or not sufficiently explicit.
Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

Most of the clarifications made in procedure text are already visible in section 10 tabular format and also in the ASN.1 in what is actually signalled. This will not cause any backward compatibility if comments in the tabular have been followed.

9, 12 Correction to a functionality where the specification was containing contradictions.
Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

On 9 and the correction on Hysteresis, if interpreted in another way than what is agreed in this CR, the change is not backward compatible. If a UE has a implemented a different version than UTRAN the UE will trigger events reporting Hyst/2 too late and stop triggering Hyst/2 too early for event 1a and 1b.
On 12 if a UE has implemented a different version than UTRAN it will interpret time to trigger used in several messages according to seconds instead of ms causing event reports to be sent at the wrong point in time.

	10 Functionality is found erroneous in release 99 a non backwards compatible change corrects the function. Correction of error in pathloss summation for event 1a and 1b to work as intended when several cells are within active set and weight parameter is used. If the UE has implemented a different version than UTRAN a slight degradation of pathloss event triggering for active sets with more than one RL and W set to <> 0. 20 Functionality is found erroneous in release 99 a non backwards compatible change corrects the function. This change on default value on filter coefficient is not backward compatible, however, this change will not cause the ASN.1 decoder to reject the message. Instead 0.7 will be applied as filter instead of no filtering (=1). This will result in a slight degradation of measurement reporting if filtering is applied using the default value and if the UE and UTRAN do not have the same version implemented.

Clauses affected:	⌘	8.4, 8.4.1.3, 8.4.1.4a, 8.4.1.7, 8.4.1.7.1, 8.4.1.7.2, 8.4.1.7.3, 8.4.1.7.4, 8.4.1.8, 8.4.1.8.1, 8.4.1.9.1, 8.4.1.9a.2, 8.4.2.2, 8.6.7.1, 8.6.7.2, 8.6.7.4, 8.6.7.5, 8.6.7.10, 8.6.7.13, 8.6.7.14, 8.6.7.15, 8.6.7.16, 8.6.7.17, 8.6.7.18, 10.3.7.39, 10.3.7.47, 10.3.7.64, 10.3.7.71, 10.3.7.72, 10.3.7.73, 11, 13.4.x1 (new), 13.4.x2 (new), 13.4.x3 (new), 13.4.x4 (new), 13.4.x5 (new), 13.4.x6 (new), 14.1.2, 14.1.2.1, 14.1.2.2, 14.1.2.3, 14.1.2.4, 14.1.2.5, 14.1.2.6, 14.2, 14.3, 14.3.1.2, 14.3.1.3, 14.4.1		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘
Other comments:	⌘	According to decision on merging of CRs; Changes from R2-010913 (except HCS change that was part of the inconsistency discussion at RAN2 #21 and is now part of another CR) and R2-010892 have been included. Also R2-010934 change have been taken into account. Revision 1 includes changes from R2-011101 and R2-011136.	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

8.4 Measurement procedures

The UE measurements are grouped into 7 different categories, according to what the UE should measure.
The different types of measurements are:

- **Intra-frequency measurements**: measurements on downlink physical channels at the same frequency as the active set. Detailed description is found in subclause 14.1.

- **Inter-frequency measurements**: measurements on downlink physical channels at frequencies that differ from the frequency of the active set. Detailed description is found in subclause 14.2.

- **Inter-RAT measurements**: measurements on downlink physical channels belonging to another radio access technology than UTRAN, e.g. PDC or GSM. Detailed description is found in subclause 14.3.

- **Traffic volume measurements**: measurements on uplink traffic volume. Detailed description is found in subclause 14.4.

- **Quality measurements**: Measurements of quality parameters, e.g. downlink transport block error rate. Detailed description is found in subclause 14.5.

- **UE-internal measurements**: Measurements of UE transmission power and UE received signal level. Detailed description is found in subclause 14.6.

- **UE positioning measurements:** Measurements of UE position. Detailed description is found in subclause 14.7.

The UE shall support a number of measurements running in parallel (the number of parallel measurements to be supported is specified in [19] and [20]). The UE shall also support that each measurement is controlled and reported independently of every other measurement.
Cells that the UE is monitoring (e.g. for handover measurements) are grouped in the UE into three different categories:

1. Cells, which belong to the **active set.** User information is sent from all these cells. In FDD, the cells in the active set are involved in soft handover. In TDD the active set always comprises of one cell only.

2. Cells, which are not included in the active set, but are monitored according to a neighbour list assigned by the UTRAN belong to the **monitored set.**

3. Cells detected by the UE, which are neither included in the active set nor in the monitored set belong to the **detected set.** Reporting of measurements of the detected set is only required for intra-frequency measurements made by UEs in CELL_DCH state.

UTRAN may control a measurement in the UE either by broadcast system information and/or by transmitting a MEASUREMENT CONTROL message. The latter message includes the following measurement control information:

1. **Measurement identity**: A reference number that should be used by the UTRAN when setting up, modifying or releasing the measurement and by the UE in the measurement report.

2. **Measurement command**: One out of three different measurement commands.

   - Setup: Setup a new measurement.

   - Modify: Modify a previously defined measurement, e.g. to change the reporting criteria.

   - Release: Stop a measurement and clear all information in the UE that are related to that measurement.

3. **Measurement type**: One of the types listed above describing what the UE shall measure.

   Presence or absence of the following control information depends on the measurement type

4. **Measurement objects:** The objects the UE shall measure, and corresponding object information.

5. **Measurement quantity:** The quantity the UE shall measure. This also includes the filtering of the measurements.

6. **Reporting quantities:** The quantities the UE shall include in the report in addition to the quantities that are mandatory to report for the specific event.

7. **Measurement reporting criteria**: The triggering of the measurement report, e.g. periodical or event-triggered reporting.

8. **Measurement Validity**: Defines in which UE states the measurement is valid.

9. **Measurement reporting mode**: This specifies whether the UE shall transmit the measurement report using AM or UM RLC.

10. **Additional measurement identities**: A list of references to other measurements. When this measurement triggers a measurement report, the UE shall also include the reporting quantities for the measurements referenced by the additional measurement identities.

All these measurement parameters depend on the measurement type and are described in more detail in clause 14.
When the reporting criteria are fulfilled, i.e. a specified event occurred or the time since last report indicated for periodical reporting has elapsed, the UE shall send a MEASUREMENT REPORT message to UTRAN.
In CELL_FACH, CELL_PCH or URA_PCH state, the UE shall perform measurements according to the measurement control information included in System Information Block Type 12 or System Information Block Type 11, according to subclause 8.1.1.6.11. The UE may also be requested to perform traffic volume measurements according to the measurement control information in a MEASUREMENT CONTROL message.
In CELL_DCH state, the UE may be requested to report measurements from any of the measurement types. The UE may also be requested to report cells from the detected set. The triggering event for the UE to send a MEASUREMENT REPORT message for detected set cells is defined in measurement events 1A and 1E for FDD cells and in measurement event 1G for TDD cells in clause 14.
In order to receive information for the immediate establishment of macrodiversity (FDD) or to support the DCA algorithm (TDD), the UTRAN may also indicate to the UE in System Information Block Type 11 or System Information Block Type 12, to append radio link related measurement reports to the following messages when they are sent on common transport channels (i.e., RACH, CPCH, USCH):

- RRC CONNECTION REQUEST message sent to establish an RRC connection;

- INITIAL DIRECT TRANSFER message sent uplink to establish a signalling connection;

- UPLINK DIRECT TRANSFER message to transfer NAS messages for an existing signalling connection;

- CELL UPDATE message sent to respond to a UTRAN originated page;

- MEASUREMENT REPORT message sent to report uplink traffic volume;

- PUSCH CAPACITY REQUEST message sent to request PUSCH capacity (TDD only).

8.4.1.3 Reception of MEASUREMENT CONTROL by the UE

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in subclause 8.6 unless otherwise specified below.
The UE shall:

- read the IE "Measurement command";
- if the IE "measurement command" has the value "setup":
  - store this measurement in the variable MEASUREMENT_IDENTITY according to the IE "measurement identity", possibly overwriting the measurement previously stored with that identity;
  - for measurement types "inter-RAT measurement" or "inter-frequency measurement":
    - if, according to its measurement capabilities, the UE requires compressed mode to perform the measurements and a compressed mode pattern sequence with an appropriate measurement purpose is simultaneously activated by the IE "DPCH compressed mode status info"; or
    - if, according to its measurement capabilities, the UE does not require compressed mode to perform the measurements:
      - begin measurements according to the stored control information for this measurement identity;
  - for any other measurement type:
    - begin measurements according to the stored control information for this measurement identity.
  - if the IE "Measurement command" has the value "modify":
    - for all measurement control present in the MEASUREMENT CONTROL message:
      - if a measurement was stored in the variable MEASUREMENT_IDENTITY associated to the identity by the IE “measurement identity”:
        - replace the corresponding information stored in variable MEASUREMENT_IDENTITY associated to the identity indicated by the IE "measurement identity";
        - resume the measurements according to the new stored measurement control information.
      - Otherwise, set the variable CONFIGURATION_INCOMPLETE to TRUE.
- if the IE "measurement command" has the value "release":
  - terminate the measurement associated with the identity given in the IE "measurement identity";
  - clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY.
- if the IE "DPCH Compressed Mode Status Info" is present, the UE shall:
  - if pattern sequence corresponding to IE "TGPSI" is already active (according to "TGPS Status Flag"):
    - deactivate this pattern sequence at the beginning of the frame indicated by IE "TGPS reconfiguration CFN" received in the message;

- after the time indicated by IE "TGPS reconfiguration CFN" has elapsed:
    - activate the pattern sequence stored in the variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "active" at the time indicated by IE "TGCFN"; and
    - begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
    - if the values of IE "TGPS reconfiguration CFN" and IE "TGCFN" are equal:
        - start the concerned pattern sequence immediately at that CFN;
- not alter pattern sequences stored in variable TGPS_IDENTITY, but not identitifed in IE "TGPSI"
- clear the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS;
- And the procedure ends.

8.4.1.4a Configuration Incomplete

If the variable CONFIGURATION_INCOMPLETE is set to TRUE, the UE shall:

- retain the measurement configuration that was valid before the MEASUREMENT CONTROL message was received;
- set the IE "RRC transaction identifier" in the MEASUREMENT CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS and clear that entry;
- clear the variable CONFIGURATION_INCOMPLETE;
- set the cause value in IE "failure cause" to "~~incomplete configuration~~Configuration incomplete";
- submit the MEASUREMENT CONTROL FAILURE message to lower layers for transmission on the DCCH using AM RLC;
- continue with any ongoing processes and procedures as if the invalid MEASUREMENT CONTROL message has not been received;
- And the procedure ends.

8.4.1.7 Measurements after transition from CELL_FACH to CELL_DCH state

The UE shall obey the following rules for different measurement types after transiting from CELL_FACH to CELL_DCH state:

8.4.1.7.1 Intra-frequency measurement

Upon transition from CELL_FACH to CELL_DCH state, the UE shall:

- retrieve each set of measurement control information of measurement type "intra-frequency" stored in the variable MEASUREMENT_IDENTITY; and
  - if the IE "measurement validity" for a measurement has been assigned the value "CELL_DCH"; ~~and~~
    - if the UE has not performed a cell reselection whilst out of CELL_DCH state:
      - resume the measurement reporting.
    - if the UE has performed a cell reselection whilst out of CELL_DCH state and the cell reselection has occurred after the measurement control information was stored:
      - delete the measurement associated with the variable MEASUREMENT_I~~N~~DENTITY.
- if no intra-frequency measurements applicable to CELL_DCH state are stored in the variable MEASUREMENT_IDENTITY:
  - continue monitoring the list of neighbouring cells assigned in the IE "intra-frequency cell info" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);
  - if the IE "intra-frequency measurement reporting criteria" was included in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11):
    - send the MEASUREMENT REPORT message when reporting criteria in IE "Reporting information for CELL_DCH" are fulfilled;

8.4.1.7.2 Inter-frequency measurement

Upon transition from CELL_FACH to CELL_DCH state, the UE shall:

- stop monitoring the list of cells assigned in the IE "inter-frequency cell info" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);
- retrieve each set of measurement control information of measurement type "inter-frequency" stored in the variable MEASUREMENT_IDENTITY; and
  - if the IE "measurement validity" for a measurement has been assigned the value "CELL_DCH";
    - if the UE has not performed a cell reselection whilst out of CELL_DCH state:
      - resume the measurement reporting.
    - if the UE has performed a cell reselection whilst out of CELL_DCH state and the cell reselection has occurred after the measurement control information was stored:
      - delete the measurement associated with the variable MEASUREMENT_IDENTITY.

~~if the UE has previously stored an inter-frequency measurement, for which the IE "measurement validity" for this measurement has been included, and the IE "UE state" has been assigned the value "CELL_DCH":~~

~~- resume this measurement and associated reporting.~~

8.4.1.7.3 Inter-RAT measurement

The UE shall:

- stop monitoring the list of cells assigned in the IE "inter-frequency system info" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);

~~if the UE has previously stored an inter-RAT measurement, for which the IE "measurement validity" for this measurement has been included, and the IE "UE state" has been assigned the value "CELL_DCH":~~

~~- resume this measurement and associated reporting.~~

8.4.1.7.4 Traffic volume measurement

Upon transition from CELL_FACH to CELL_DCH state, the UE shall:

- retrieve each set of measurement control information of measurement type "traffic volume" stored in the variable MEASUREMENT_IDENTITY;
  - if the optional IE "measurement validity" for this measurement has not been included:
    - delete the measurement associated with the variable MEASUREMENT_IDENTITY;
  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "~~all-but-CELL_DCH~~all states except CELL_DCH":
    - stop measurement reporting; and
    - save the measurement associated with the variable MEASUREMENT_IDENTITY to be used after the next transition to CELL_FACH state;
  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":
    - continue measurement reporting;
  - if the IE "measurement validity" has been included and the IE "UE state" has been assigned to value "CELL_DCH":
    - resume this measurement and associated reporting;
- if no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_DCH state:
  - continue an ongoing traffic volume type measurement, assigned in System Information Block type 11 (or System Information Block type 12, according to subclause 8.1.1.6.11);
- if the UE in CELL_DCH state receives a MEASUREMENT CONTROL message, which indicates the same measurement identity as that stored in variable MEASUREMENT_IDENTITY:
  - update the stored information with the traffic volume measurement control information in variable MEASUREMENT_IDENTITY.

8.4.1.8 Measurements after transition from idle mode to CELL_DCH state

The UE shall obey the following rules for different measurement types after transiting from idle mode to CELL_DCH state:

8.4.1.8.1 Intra-frequency measurement

Upon transition from idle mode to CELL_DCH state, the UE shall:

- begin or continue monitoring the list of cells assigned in the IE "intra-frequency cell info" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);

- if the "intra-frequency measurement reporting criteria" IE was included in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11):

  - ~~being~~ begin measurement reporting according to the IE.

8.4.1.9 Measurements after transition from idle mode to CELL_FACH state

The UE shall obey the follow rules for different measurement types after transiting from idle mode to CELL_FACH state:

8.4.1.9.1 Intra-frequency measurement

Upon transition from idle mode to CELL_FACH state, the UE shall:

- begin or continue monitoring cells listed in the IE "intra-frequency cell info" received in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);

- if the UE receives the IE "Intra-frequency reporting quantity for RACH Reporting" and IE "Maximum number of Reported cells on RACH" from System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11):

  - use this information for reporting measured results in RACH messages.

8.4.1.9a.2 Inter-frequency measurement

Upon transition from connected mode to idle mode, the UE shall:

- stop monitoring inter-frequency cells listed in the IE "inter-frequency cell info" received in System Information Block type 12 (if System Information Block type 12 is transmitted in the cell, according to 8.1.1.6.11);

- begin monitoring inter-frequency cells listed in the IE "inter-frequency cell info" received in System Information Block type 11.

8.4.2.2 Initiation

In CELL_DCH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are met for any ongoing measurements that are being performed in the UE.
In CELL_FACH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are met for any ongoing traffic volume measurement that is being performed in the UE.
In TDD, if the Radio Bearer associated with the MEASUREMENT_IDENTITY fulfilling the reporting criteria for an ongoing traffic volume measurement is mapped on transport channel of type USCH, the UE shall initiate the "PUSCH CAPACITY REQUEST" procedure instead of transmitting a MEASUREMENT REPORT (TDD Only).
In CELL_PCH or URA_PCH state, the UE shall first perform the cell update procedure according to subclause 8.3.1, using the cause "uplink data transmission", in order to transit to CELL_FACH state and then transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are fulfilled for any ongoing traffic volume measurement which is being performed in the UE.
The reporting criteria are fulfilled if either:

- the first measurement has been completed according to the requirements set in [19] or [20] for a newly initiated measurement with periodic reporting; or

- the time period indicated in the stored IE "Periodical reporting criteria" has elapsed since the last measurement report was transmitted for a given measurement; or

- an event in stored IE "Measurement reporting criteria" was triggered. Events and triggering of reports for different measurement types are described in detail in clause 14.

For the measurement, which triggered the MEASUREMENT REPORT message, the UE shall:

- set the IE "measurement identity" to the measurement identity, which is associated with that measurement in variable MEASUREMENT_IDENTITY;

- set the IE "measured results" to include measurements according to the IE "reporting quantity" of that measurement stored in variable MEASUREMENT_IDENTITY; and

  - if all the reporting quantities are set to "false":

    - not set the IE "measured results";

- set the IE "Measured results" in the IE "Additional measured results" according to the IE "reporting quantity" for all measurements associated with the measurement identities included in the IE "additional measurements" stored in variable MEASUREMENT_IDENTITY of the measurement that triggered the measurement report; and

  - if more than one additional measured results are to be included:

    - sort them in ascending order according to their IE "measurement identity" in the MEASUREMENT REPORT message;

- if the MEASUREMENT REPORT message was triggered by an event (i.e. not a periodical report):

  - set the IE "Event results" according to the event that triggered the report.

The UE shall:

- transmit the MEASUREMENT REPORT message on the uplink DCCH using either AM or UM RLC according to the stored IE "measurement reporting mode" associated with the measurement identity that triggered the report.

When the MEASUREMENT REPORT message has been submitted to lower layers for transmission:

- The procedure ends.

8.6.7 Measurement information elements

8.6.7.1 Measurement validity

If the optional IE "measurement validity" for a given measurement has not been included in measurement control information, the UE shall delete the measurement associated with the variable MEASUREMENT IDENTITY after the UE makes a transition to a new state.
If the IE "measurement validity" for this measurement has been included in measurement control information, the UE shall save the measurement associated with the variable MEASUREMENT IDENTITY. The IE "UE state" defines the scope of resuming the measurement.
If the "UE state" is defined as "all states", the UE shall continue the measurement after making a transition to a new state. This scope is assigned only for traffic volume type measurements and can only be applied by the UE if the IE "traffic volume measurement object" has ~~not~~ been included in measurement control information. If the IE "traffic volume measurement object" has not been included in measurement control information, the UE shall not save the measurement control information in variable MEASUREMENT IDENTITY, but shall send a MEASUREMENT CONTROL FAILURE message to the UTRAN with failure cause "Configuration incomplete ~~configuration~~".
If the "UE state" is defined as "all states except CELL_DCH", the UE shall store the measurement to be resumed after a subsequent transition from CELL_DCH state to any of the other states in connected mode. This scope is assigned only for traffic volume type measurements.
If the "UE state" is defined as "CELL_DCH", the UE shall store the measurement to be resumed after a subsequent transition to CELL_DCH state. After cell re-selection, the UE shall delete any ongoing intra-frequency or inter-frequency and inter-RAT type measurement associated with the variable MEASUREMENT IDENTITY. Other measurement types shall, however, be continued regardless of cell reselection.

8.6.7.2 Filter coefficient

If the IE "Filter coefficient" is received the UE shall apply filtering of the measurements for that measurement quantity according to the formula below. This filtering shall be performed by the UE before UE event evaluation. The UE shall also filter the measurements reported in the IE "Measured results". The filtering shall not be performed for the measurements reported in the IE "~~Measurement~~ Measured results on RACH" and for cell-reselection in connected or idle mode.
The filtering shall be performed according to the following formula.

$$F_n = (1-a) \cdot F_{n-1} + a \cdot M_n$$

The variables in the formula are defined as follows:
F_n is the updated filtered measurement result
F_{n-1} is the old filtered measurement result
M_n is the latest received measurement result from physical layer measurements, the unit used for M_n is the same unit as the reported unit in the MEASUREMENT REPORT message or the unit used in the event evaluation.
$a = 1/2^{(k/2)}$, where k is the parameter received in the IE "Filter coefficient".
NOTE: if ~~a is set to 1~~ k is set to 0 that will mean no layer 3 filtering.

In order to initialise the averaging filter, F_0 is set to M_1 when the first measurement result from the physical layer measurement is received.
The physical layer measurement results are sampled once every measurement period. The measurement period and the accuracy for a certain measurement is defined in [19] and [20].

8.6.7.4 Intra-frequency measurement quantity

If the IE "Intra-frequency measurement quantity" is received in a MEASUREMENT CONTROL message, the UE shall:

- if the IE "Measurement quantity" is set to "pathloss"; and
- for any intra-frequency cell indicated by the IE "Cells for measurement", the IE "Primary CPICH Tx power" in FDD or the IE "Primary CCPCH TX Power" in TDD in the intra frequency cell info list in the variable CELL_INFO_LIST is not present:
  - set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE;
- else:
  - configure the measurement quantity accordingly.

8.6.7.5 Inter-RAT measurement quantity

If the IE "Inter-RAT measurement quantity" is received in a MEASUREMENT CONTROL message and CHOICE system is GSM, the UE shall:

- if IE "BSIC verification required" is set to "required", for cells that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", and that has a "verified" BSIC:
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if IE "BSIC verification required" is set to "not required", for cells that match any of the BCCH ARFCN in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", regardless if the BSIC is "verified" or "non-verified":
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if the IE "Measurement quantity" is set to "pathloss"; and
- for any inter-RAT cell indicated by the IE "Cells for measurement", the IE "Output power" in the inter-RAT cell info list in the variable CELL_INFO_LIST is not present:
  - set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

NOTE: The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

8.6.7.10 Traffic Volume Measurement

If the IE "Traffic Volume Measurement" is received by the UE, the UE shall:
- store the content of the IE to the variable MEASUREMENT_IDENTITY.

If the IE "Traffic volume measurement Object" is not included, the UE shall:
- apply the measurement reporting criteria to all uplink transport channels.

If IE "Traffic volume measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", and if the IE "traffic volume reporting quantity" is included, the UE shall:
- report the measured quantities specified in the IE "traffic volume reporting quantity";
- if the parameter "Average of RLC Buffer Payload for each RB" or the parameter "Variance of RLC Buffer payload for each RB" is set:
  - if the IE "Traffic volume measurement quantity" is not included:
    - set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE;
  - if the IE "Traffic volume measurement quantity" is included;
    - if the parameter "time interval to take an average or a variance" is included:
      - use the time specified in the parameter "time interval to take an average or a variance" to calculate the average and/or variance of RLC Buffer Payload according to the IE "traffic volume reporting quantity";
    - if the parameter "time interval to take an average or a variance" is not included:
      - set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

If IE "Traffic volume measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Traffic volume measurement quantity", IE "Traffic volume reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:
- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.13 Measurement Reporting Mode

If IE "Measurement Reporting Mode" is received by the UE, the UE shall:

- store the contents of the IE "Measurement Report Transfer Mode" in the variable MEASUREMENT_IDENTITY;
- use the indicated RLC mode when sending MEASUREMENT REPORT message(s) related to this measurement;
- ignore IE "Periodical Reporting / Event Trigger Reporting Mode".

If IE "Measurement Reporting Mode" is not received by the UE in MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.14 Inter-frequency measurement

If IE "Inter-frequency measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Inter-frequency measurement quantity", IE "Inter-frequency reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.15 Inter-RAT measurement

If IE "Inter-RAT measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Inter-RAT measurement quantity", IE "Inter-RAT reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.16 Intra-frequency measurement

If IE "Intra-frequency measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Intra-frequency measurement quantity", IE "Intra-frequency reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.17 Quality measurement

If IE "Quality measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Quality reporting quantity" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.18 UE internal measurement

If IE "UE internal measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "UE internal measurement quantity" or IE "UE internal reporting quantity" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

10.3.7.27 Inter-RAT measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT cell info list	OP		Inter-RAT cell info list 10.3.7.23	Measurement object
Inter-RAT measurement quantity	OP		Inter-RAT measurement quantity 10.3.7.29	
Inter-RAT reporting quantity	OP		Inter-RAT reporting quantity 10.3.7.32	
Reporting cell status	CV-*reporting*		Reporting cell status 10.3.7.61	
CHOICE report criteria	MP			
>Inter-RAT measurement reporting criteria			Inter-RAT measurement reporting criteria 10.3.7.30	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

Condition	Explanation
reporting	This IE is optional if the CHOICE "report criteria" is equal to "periodical reporting criteria" or "No reporting", otherwise the IE is not needed

10.3.7.39 Intra-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an intra-frequency measurement. All events concerning intra-frequency measurements are labelled 1x where x is a, b, c….
Event 1a: A Primary CPICH enters the Reporting Range (FDD only).
Event 1b: A Primary CPICH leaves the Reporting Range (FDD only).
Event 1c: A Non-active Primary CPICH becomes better than an active Primary CPICH (FDD only).
Event 1d: Change of best cell [Note 1] (FDD only).
Event 1e: A Primary CPICH becomes better than an absolute threshold (FDD only).
Event 1f: A Primary CPICH becomes worse than an absolute threshold (FDD only).
Event 1g: Change of best cell in TDD.
Event 1h: Timeslot ISCP below a certain threshold (TDD only).

Event 1i: Timeslot ISCP above a certain threshold (TDD only).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeasEvent>		
>Intra-frequency event identity	MP		Intra-frequency event identity 10.3.7.34	
>Triggering condition 1	CV – clause 0		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells)	Indicates which cells can trigger the event
>Triggering condition 2	CV – clause 6		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells, Detected set cells, Detected set cells and monitored set cells)	Indicates which cells can trigger the event
>Reporting Range Constant	CV – clause 2		Real(0..14.5 by step of 0.5)	In dB. In event 1a,1b.
>Cells forbidden to affect Reporting range	CV – clause 1	1 to <maxCellMeas>		In event 1a,1b
>>CHOICE *mode*	MP			
>>>FDD				
>>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>>TDD				
>>>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57	
>W	CV – clause 2		Real(0.0..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0..7.5 by step of 0.5)	In dB.
>Threshold used frequency	CV-*clause 3*		Integer (-115..165)	Range used depend on measurement quantity. CPICH RSCP -115..-25 dBm CPICH Ec/No -24..0 dB Pathloss 30..165dB ISCP -115..-25 dBm
>Reporting deactivation threshold	CV–*clause 4*		Integer(0, 1, 2, 3, 4, 5, 6, 7)	In event 1a Indicates the maximum number of cells allowed in the active set in order for event 1a to occur.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				0 means not applicable .
>Replacement activation threshold	CV-*clause 5*		Integer(0, 1, 2, 3, 4, 5, 6, 7)	In event 1c Indicates the minimum number of cells allowed in the active set in order for event 1c to occur. 0 means not applicable
>Time to trigger	MP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>Amount of reporting	CV–*clause 7*		Integer(1, 2, 4, 8, 16, 32, 64, Infinity)	
>Reporting interval	CV–*clause 7*		Integer(0, 250, 500, 1000, 2000, 4000, 8000, 16000)	Indicates the interval of periodical reporting when such reporting is triggered by an event. Interval in milliseconds. 0 means no periodical reporting
>Reporting cell status	OP		Reporting cell status 10.3.7.61	

Condition	Explanation
Clause 0	The IE is mandatory if "Intra-frequency event identity" is set to "1b" or "1f", otherwise the IE is not needed
Clause 1	The IE is optional if "Intra-frequency event identity" is set to "1a" or "1b", otherwise the IE is not needed
Clause 2	The IE is mandatory if "Intra-frequency event identity" is set to "1a" or "1b", otherwise the IE is not needed
Clause 3	The IE is mandatory if "Intra-frequency event identity" is set to , "1e", "1f", "1h", "1i" or "1j", otherwise the IE is not needed
Clause 4	The IE is mandatory if "Intra-frequency event identity" is set to "1a", otherwise the IE is not needed
Clause 5	The IE is mandatory if "Intra-frequency event identity" is set to "1c", otherwise the IE is not needed
Clause 6	The IE is mandatory if "Intra-frequency event identity" is set to "1a" or "1e".
Clause 7	The IE is mandatory if "Intra-frequency event identity" is set to "1a" or "1c".

10.3.7.47 Measurement control system information

Information element/Group name	Need	Multi	Type and reference	Semantics description
Use of HCS	MP		Enumerated (Not used, used)	Indicates if the serving cell belongs to a HCS structure
Cell_selection_and_reselection_quality_measure	MP		Enumerated (CPICH Ec/N0, CPICH RSCP)	Choice of measurement (CPICH Ec/N0 or CPICH RSCP) to use as quality measure Q.
Intra-frequency measurement system information	OP		Intra-frequency measurement system information 10.3.7.40	
Inter-frequency measurement system information	OP		Inter-frequency measurement system information 10.3.7.20	
Inter-RAT measurement system information	OP		Inter-RAT measurement system information 10.3.7.31	
Traffic volume measurement system information	OP		Traffic volume measurement system information 10.3.7.73	
UE Internal measurement system information	OP		UE Internal measurement system information 10.3.7.81	

~~NOTE1: The reporting of intra-frequency measurements is activated when state CELL_DCH is entered.~~

10.3.7.64 Time to trigger

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Time to trigger	MP		Integer(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	~~Indicates the period of time between the timing of event detection and the timing of sending Measurement Report.~~ Time in ms

10.3.7.67 Traffic volume measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement results	OP	1 to <maxRB>		
>RB Identity	MP		RB Identity 10.3.4.16	
>RLC Buffers Payload	OP		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K)	In bytes And N Kbytes = N*1024 bytes
>Average of RLC Buffer Payload	OP		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K)	In bytes And N Kbytes = N*1024 bytes
>Variance of RLC Buffer Payload	OP		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K)	In bytes And N Kbytes = N*1024 bytes

10.3.7.71 Traffic volume measurement quantity

Contains the measurement quantity information for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement quantity	MP		Enumerated(RLC buffer payload, Average RLC buffer payload, Variance of RLC buffer payload)	The use of this parameter is described in section 8.6.7.10.
Time Interval to take an average or a variance	CV-*A/V*		Integer(20, 40, ..260, by steps of 20)	In ms

Condition	Explanation
A/V	This IE is present when "Average RLC buffer" or "Variance of RLC buffer payload" is chosen.

10.3.7.72 Traffic volume measurement reporting criteria

Contains the measurement reporting criteria information for a traffic volume measurement.
Event 4a: Transport Channel Traffic Volume [15] exceeds an absolute threshold.

Event 4b: Transport Channel Traffic Volume [15] becomes smaller than an absolute threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH>		
>Uplink transport channel type	MP		Enumerated(DCH,RACH, USCH)	USCH is TDD only
>UL Transport Channel ID	CV-*UL-DCH/USCH*		Transport channel identity 10.3.5.18	
>Parameters required for each Event	OP	1 to <maxMeasperEvent>		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	
>>Reporting Threshold	MP		Enumerated(8,16,32,64,128,256,512,1024,2K,3K,4K,6K,8K,12K,16K,24K,32K,48K,64K,96K,128K,192K,256K,384K,512K,768K)	Threshold in bytes And N Kbytes = N*1024 bytes
>>Time to trigger	OP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>>Pending time after trigger	OP		Integer(250, 500, 1000, 2000, 4000, 8000, 16000)	~~Time in seconds.~~ Indicates the period of time during which it is forbidden to send any new measurement reports with the same Traffic volume event identity even if the triggering condition is fulfilled ~~again~~. Time in milliseconds
>>Tx interruption after trigger	OP		Integer (250, 500, 1000, 2000, 4000, 8000, 16000)	Time in milliseconds. Indicates ~~whether or not~~how long the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.

Condition	Explanation
UL-DCH/USCH	If IE "Uplink transport channel type" is equal to "DCH" or "USCH" (TDD only) this IE is OP. Otherwise the IE is not needed.

10.3.7.73 Traffic volume measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement identity	MD		Measurement identity 10.3.7.48	The traffic volume measurement identity has default value 4.
Traffic volume measurement objects	OP		Traffic volume measurement objects 10.3.7.70	
Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
Measurement validity	OP		Measurement validity 10.3.7.51	
Measurement Reporting Mode	MP		Measurement Reporting Mode 10.3.7.49	
CHOICE reporting criteria	MP			
>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.72	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	

11.3 Information element definitions

```
InterFreqMeasQuantity ::=           SEQUENCE {
    reportingCriteria                   CHOICE {
        intraFreqReportingCriteria          SEQUENCE {
            intraFreqMeasQuantity               IntraFreqMeasQuantity
        },
        interFreqReportingCriteria          SEQUENCE {
            filterCoefficient                   FilterCoefficient           DEFAULT
fc0,
            modeSpecificInfo                    CHOICE {
                fdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-FDD     FreqQualityEstimateQuantity-
FDD
                },
                tdd                                 SEQUENCE {
```

```
                    freqQualityEstimateQuantity-TDD     FreqQualityEstimateQuantity-
TDD
                }
            }
        }
    }
}


InterRATMeasQuantity ::=                SEQUENCE {
    measQuantityUTRAN-QualityEstimate       IntraFreqMeasQuantity           OPTIONAL,
    ratSpecificInfo                     CHOICE {
        gsm                                     SEQUENCE {
            measurementQuantity                     MeasurementQuantityGSM,
            filterCoefficient                       FilterCoefficient       DEFAULT
~~fc1~~fc0,
            bsic-VerificationRequired               BSIC-VerificationRequired
        },
        is-2000                                 SEQUENCE {
            tadd-EcIo                               INTEGER (0..63),
            tcomp-EcIo                              INTEGER (0..15),
            softSlope                               INTEGER (0..63)         OPTIONAL,
            addIntercept                            INTEGER (0..63)         OPTIONAL
        }
    }
}


IntraFreqMeasQuantity ::=           SEQUENCE {
    filterCoefficient                   FilterCoefficient                   DEFAULT
~~fc1~~fc0,
    modeSpecificInfo                    CHOICE {
        fdd                             SEQUENCE {
            intraFreqMeasQuantity-FDD       IntraFreqMeasQuantity-FDD
        },
        tdd                             SEQUENCE {
            intraFreqMeasQuantity-TDDList   IntraFreqMeasQuantity-TDDList
        }
    }
}

MeasurementControlSysInfo ::=       SEQUENCE {
    use-of-HCS                          CHOICE  {
        hcs-not-used                    SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
RSCP    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
RSCP    OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
ECN0        OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
ECN0    OPTIONAL
                }
            },
            interRATMeasurementSysInfo      InterRATMeasurementSysInfo-HCS
    OPTIONAL
        },
        hcs-used                        SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
HCS-RSCP            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
HCS-RSCP            OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
HCS-ECN0            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
HCS-ECN0            OPTIONAL                }
            },
```

```
            interRATMeasurementSysInfo      InterRATMeasurementSysInfo      OPTIONAL
        }
    },

    trafficVolumeMeasSysInfo            TrafficVolumeMeasSysInfo            OPTIONAL,
    ue-InternalMeasurementSysInfo       UE-InternalMeasurementSysInfo       OPTIONAL
}


UE-InternalMeasQuantity ::=         SEQUENCE {
    measurementQuantity                 UE-MeasurementQuantity,
    filterCoefficient                   FilterCoefficient                   DEFAULT
~~fc1~~fc0}
```

13.4.x TRIGGERED_1A_EVENTS

This variable contains information about 1a events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	
>sent reports	MP		Integer(1..Infinity)	Number of reports sent to UTRAN in case of event triggered periodical reporting

13.4.x TRIGGERED_1B_EVENTS

This variable contains information about 1b events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

13.4.x TRIGGERED_1C_EVENTS

This variable contains information about 1b events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	
>sent reports	MP		Integer(1..Infinity)	Number of reports sent to UTRAN in case of event triggered periodical reporting

13.4.x BEST_CELL_1D_EVENT

This variable contains information about 1d events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Best cell	MP		Primary CPICH info 10.3.6.60	

13.4.x TRIGGERED_1E_EVENTS

This variable contains information about 1e events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

13.4.x TRIGGERED_1F_EVENTS

This variable contains information about 1f events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

14 Specific functions

14.1 Intra-frequency measurements

14.1.1 Intra-frequency measurement quantities

1 Downlink E_c/I_0 (chip energy per total received channel power density).

2 Downlink path loss.

3 Downlink received signal code power (RSCP) after despreading.

4 ISCP measured on Timeslot basis.

14.1.2 Intra-frequency reporting events for FDD

Within the measurement reporting criteria field in the Measurement Control message the UTRAN notifies the UE which events should trigger a measurement report. The listed events are the toolbox from which the UTRAN can choose the reporting events that are needed for the implemented handover evaluation function, or other radio network functions.
All the illustrated events are measured with respect to any of the measurement quantities given in subclause 14.1.1. The measurement objects are the monitored primary common pilot channels (CPICH). ~~The reporting events are marked with vertical arrows in the figures below.~~

NOTE: The events below are numbered 1A, 1B, 1C,… since all intra-frequency reporting events would be labelled 1X, inter-frequency reporting events would be labelled 2X, and so on for the other measurement types.

14.1.2.1 Reporting event 1A: A Primary CPICH enters the reporting range

When event 1A is configured in the UE~~ordered by UTRAN in a measurement control message~~, the UE shall ~~send a measurement report when a primary CPICH enters the reporting range as defined by the following formula~~:
If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if that primary CPICH is part of cells allowed to trigger the event according to "Triggering condition 2", and if that primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1A_EVENTS:

  - include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1A_EVENTS;

  - if the value of "Reporting deactivations threshold" for this event is greater than the current number of cells in the active set or equal to 0:

    - if "Reporting interval" for this event is not equal to 0:

      - start a timer for that primary CPICH with the value of "Reporting interval" for this event.

    - set "sent reports" for that primary CPICH in the variable TRIGGERED_1A_EVENTS;

    - send a measurement report with IEs set as below:

      In "intra-frequency event results; "Intrafrequency event identity" to "1a" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1a event that is triggered without a report being sent.

      "measured results" and possible "additional measured results" according to 8.4.2.

- if that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1A_EVENTS, and not included in the current active set:

  - if "Reporting interval" for this event is not equal to 0, and if "Reporting interval is larger than "sent reports" stored for that primary CPICH, in "cells triggered" in the variable TRIGGERED_1A_EVENTS;

  and if the timer for that primary CPICH in the variable TRIGGERED_1A_EVENTS has expired:

    - increment the stored counter "sent reports" for that CPICH in "cell triggered" in variable TRIGGERED_1A_EVENTS;

    - start a timer for that primary CPICH with the value of "Reporting interval" for this event;

    - send a measurement report with IEs set as below:

      In "intra-frequency event results; "Intrafrequency event identity" to "1a" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1a event that is triggered without a report being sent.

      "measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1A_EVENTS:

  - Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1A_EVENTS;

  - stop reporting interval timers related to that primary CPICH.

Upon transition to CELL_DCH the UE shall:

- Include the primary CPICH of all cells in the current active set into the "cells triggered" in the variable TRIGGERED_1A_EVENTS.

Equation 1 (Triggering condition ~~F~~for pathloss)~~:~~

$$10 \cdot LogM_{New} \le W \cdot 10 \cdot Log\left(1/\sum_{i=1}^{N_A}(1/M_i)\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R_{1a} - H_{1a}/2),$$ Hans: the formula has changed

Equation 2 (Triggering condition ~~F~~for all the other measurement quantities~~):~~

$$10 \cdot LogM_{New} \ge W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R_{1a} - H_{1a}/2),$$ Hans: the formula has changed

Equation 3 (Leaving triggering condition for pathloss)

$$10 \cdot LogM_{New} \ge W \cdot 10 \cdot Log\left(1/\sum_{i=1}^{N_A}(1/M_i)\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R_{1a} + H_{1a}/2),$$ Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$$10 \cdot LogM_{New} \le W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R_{1a} + H_{1a}/2),$$ Hans: the formula is new

The variables in the formula are defined as follows:

$\boldsymbol{M_{New}}$ is the measurement result of the cell entering the reporting range.

$\boldsymbol{M_i}$ is a measurement result of a cell in the active set.

$\boldsymbol{N_A}$ is the number of cells in the current active set.

~~$\boldsymbol{M_{Best}}$ is the measurement result of the strongest cell in the active set.~~

For pathloss

$\boldsymbol{M_{Best}}$ is the measurement result of the cell in the active set with the lowest measurement result.

for other measurements quantities.

$\boldsymbol{M_{Best}}$ is the measurement result of the cell in the active set with the highest measurement result.

$\boldsymbol{W}$ is a parameter sent from UTRAN to UE.

$\boldsymbol{R_{1a}}$ is the reporting range constant

$\boldsymbol{H_{1a}}$ is the hysteresis parameter for the event 1a.

If the measurement results are pathloss or CPICH-Ec/No then $\boldsymbol{M_{New}}$, $\boldsymbol{M_i}$ and $\boldsymbol{M_{Best}}$ are expressed as ratios.

If the measurement result is CPICH-RSCP then $\boldsymbol{M_{New}}$, $\boldsymbol{M_i}$ and $\boldsymbol{M_{Best}}$ are expressed in [mW].

The addition window of cells in event 1A is configured with the **reporting range constant** parameter ($\boldsymbol{R_{1a}}$) ~~common to many reporting events and an optional~~ with an additional **hysteresis** parameter ($\boldsymbol{H_{1a}}$)~~., which can be used to distinguish the addition window from reporting windows related to other measurement events.~~

The occurrence of event 1A is conditional on a **report deactivation threshold** parameter. ~~This parameter indicates the maximum number of cells allowed in the active set for measurement reports to be triggered by event 1A to be transmitted.~~

Event 1A may be enhanced with an addition timer, which is configured with the **time-to-trigger** parameter (see subclause 14.1.5.2). If a time-to-trigger value is used, a cell must continuously stay within the reporting range for the given time period, before the UE shall send a measurement report.

Event 1A may be used for triggering a measurement report, which includes cells, which the UE has detected without having received a neighbour cell list.

If more than one cell triggers event 1A within the UE internal event evaluation period (defined in [19]) and fulfils the reporting criteria after the addition timer has elapsed , the UE shall report all of the triggering cells in the event results. The triggering cells shall be sorted in descending order according to the measured quantity.

14.1.2.2 Reporting event 1B: A primary CPICH leaves the reporting range

When ~~this~~ event 1B is configured in the UE~~ordered by UTRAN in a measurement control message~~, the UE shall ~~send a measurement report when a primary CPICH leaves the reporting range as defined by the following formula~~:

If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if that primary CPICH is part of cells allowed to trigger the event according to "Triggering condition 1", and if that primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1B_EVENTS:

  - include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1B_EVENTS;

  - send a measurement report with IEs set as below:

    In "intra-frequency event results; "Intrafrequency event identity" to "1b" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1b event that is triggered without a report being sent.

    "measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1B_EVENTS:

  - Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1B_EVENTS;

Equation 1 (Triggering condition ~~F~~for pathloss)~~:~~

$$10 \cdot LogM_{Old} \geq W \cdot 10 \cdot Log\left(1/\sum_{i=1}^{N_A}(1/M_i)\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R + H_{1b}/2),$$ Hans: the formula has changed

Equation 2 (Triggering condition ~~F~~for all the other measurement quantities)~~:~~

$$10 \cdot LogM_{Old} \leq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R + H_{1b}/2),$$ Hans: the formula has changed

Equation 3 (Leaving triggering condition for pathloss)

$$10 \cdot LogM_{Old} \leq W \cdot 10 \cdot Log\left(1/\sum_{i=1}^{N_A}(1/M_i)\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R - H_{1b}/2),$$ Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$$10 \cdot LogM_{Old} \geq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R - H_{1b}/2),$$ Hans: the formula is new

The variables in the formula are defined as follows:

$\boldsymbol{M_{Old}}$ is the measurement result of the cell leaving the reporting range.

$\boldsymbol{M_i}$ is a measurement result of a cell in the active set.

$\boldsymbol{N_A}$ is the number of cells in the current active set.

~~$\boldsymbol{M_{Best}}$ is the measurement result of the strongest cell in the active set.~~

For pathloss

$\boldsymbol{M_{Best}}$ is the measurement result of the cell in the active set with the lowest measurement result.

for other measurement quantities

M_{Best} is the measurement result of the cell in the active set with the highest measurement result.

W is a parameter sent from UTRAN to UE.

R_{1b} is the reporting range constant

H_{1b} is the hysteresis parameter for the event 1b.

If the measurement results are pathloss or CPICH-Ec/No then M_{New}, M_i and M_{Best} are expressed as ratios.

If the measurement result is CPICH-RSCP then M_{New}, M_i and M_{Best} are expressed in [mW].

The drop window of cells in event 1B is configured with the **reporting range constant** parameter (R_{1b}) ~~common to many reporting events and an optional~~ with an additional **hysteresis** parameter (H_{1b})~~, which can be used to distinguish the drop window from reporting windows related to other measurement events.~~

Event 1B may be enhanced with a drop timer, which is configured with the **time-to-trigger** parameter. If the timer is used, the weakening cell must continuously stay below the reporting range for the given time period before the UE may send a measurement report.

If more than one cell triggers event 1B within the UE internal event evaluation period (defined in [19]) and fulfils the reporting criteria after the drop timer has elapsed, the UE shall report all of the triggering cells in the event results. The triggering cells shall be sorted in descending order according to the measured quantity.

14.1.2.3 Reporting event 1C: A non-active primary CPICH becomes better than an active primary CPICH

When event 1C is configured in the UE, the UE shall:

If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if the primary CPICH that is better is not included in the active set but the other primary CPICH is any of the primary CPICHs included in the active set, and if that primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1C_EVENTS:

  - include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1C_EVENTS;

  - if the value of "Replacement activation threshold" for this event is lower than the current number of cells in the active set or equal to 0:

    - if "Reporting interval" for this event is not equal to 0:

      - start a timer for that primary CPICH with the value of "Reporting interval" for this event.

    - set "sent reports" for that primary CPICH in the variable TRIGGERED_1C_EVENTS;

    - send a measurement report with IEs set as below:

      In "intra-frequency event results; "Intrafrequency event identity" to "1c" and the first entry in "cell measurement event results" to the CPICH info of the primary CPICH not in the active set that triggered the report. Further set the second entry in "cell measurement event results" to the CPICH info of the primary CPICH in the active set that now is worse than the new primary CPICH and has the best measured value (lowest measured result for pathloss and highest measured result for other measurements). Continue to set the rest of the entries to other primary CPICHs that is now worse than this new primary CPICH in the order of their measured value.

      "measured results" and possible "additional measured results" according to 8.4.2.

- if that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1C_EVENTS, and not included in the current active set:

  - if "Reporting interval" for this event is not equal to 0, and if "Reporting interval is larger than "sent reports" stored for that primary CPICH, in "cells triggered" in the variable TRIGGERED_1C_EVENTS;

    and if the timer for that primary CPICH in the variable TRIGGERED_1C_EVENTS has expired:

    - increment the stored counter "sent reports" for that CPICH in "cell triggered" in variable TRIGGERED_1C_EVENTS;

    - start a timer for that primary CPICH with the value of "Reporting interval" for this event;

    - send a measurement report with IEs set as below:

      In "intra-frequency event results; "Intrafrequency event identity" to "1c" and the first entry in "cell measurement event results" to the CPICH info of the primary CPICH not in the active set that triggered the report. Further set the second entry in "cell measurement event results" to the CPICH info of the primary CPICH in the active set that now is worse than the new primary CPICH and has the best measured value (lowest measured result for pathloss and highest measured result for other measurements). Continue to set the rest of the entries to other primary CPICHs that is now worse than this new primary CPICH in the order of their measured value.

      "measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1C_EVENTS:

  - Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1C_EVENTS;

  - stop reporting interval timers related to that primary CPICH.

Equation 1 (Triggering condition for pathloss)

$M_{New} \leq M_{InAS} - H_{1c}/2$, Hans: the formula is new

Equation 2 (Triggering condition for all the other measurement quantities)

$M_{New} \geq M_{InAS} + H_{1c}/2$, Hans: the formula is new

Equation 3 (Leaving triggering condition for pathloss)

$M_{New} \geq M_{InAS} + H_{1c}/2$, Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$M_{New} \leq M_{InAS} - H_{1c}/2$, Hans: the formula is new

The variables in the formula are defined as follows:

M_{New} is the measurement result of the cell not included in the active set.

M_{InAS} is the measurement result of a cell in the active set.

H_{1c} is the hysteresis parameter for the event 1a.

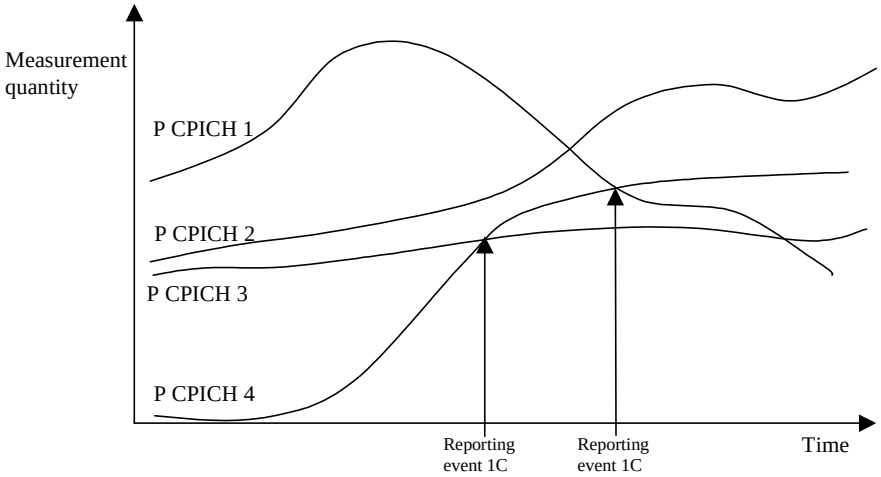

Figure 63: A primary CPICH that is not included in the active set becomes better than a primary CPICH that is in the active set

In this example the cells belonging to primary CPICH 1, 2 and 3 are supposed to be in the active set, but the cell transmitting primary CPICH 4 is not (yet) in the active set.
If a primary CPICH that is not included in the active set becomes better than a primary CPICH that is in the active set, and event 1C has been ordered by UTRAN, this event shall trigger a report to be sent from the UE.
This event may be used for replacing cells in the active set. It is activated if the number of active cells is equal to or greater than a **replacement activation threshold** parameter that UTRAN signals to the UE in the MEASUREMENT CONTROL message. This parameter indicates the minimum number of cells required in the active set for measurement reports triggered by event 1C to be transmitted.

14.1.2.4 Reporting event 1D: Change of best cell

When event 1D is configured in the UE, the UE shall:
If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH that is not stored in "Best cell" in variable BEST_CELL_1D_EVENT, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH that is not stored in "Best cell" in variable BEST_CELL_1D_EVENT, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger":

  set "best cell" in the variable BEST_CELL_1D_EVENT to that primary CPICH that triggered the event;

- send a measurement report with IEs set as below:

  In "intra-frequency event results; "Intrafrequency event identity" to "1d" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report.

  "measured results" and possible "additional measured results" according to 8.4.2.

Upon transition to CELL_DCH the UE shall:

- set "best cell" in the variable BEST_CELL_1D_EVENT to the best cell of the primary CPICHs included in the active set.

Equation 1 (Triggering condition for pathloss)

$$M_{NotBest} \leq M_{Best} - H_{1d}/2,$$ Hans: the formula is new

Equation 2 (Triggering condition for all the other measurement quantities)

$$M_{NotBest} \geq M_{Best} + H_{1d}/2,$$ Hans: the formula is new

The variables in the formula are defined as follows:

$M_{NotBest}$ is the measurement result of a cell not stored in "best cell" in the variable BEST_CELL_1D_EVENT.

M_{Best} is the measurement result of the cell stored in "best cell" in variable BEST_CELL_1D_EVENT.

H_{1d} is the hysteresis parameter for the event 1d.

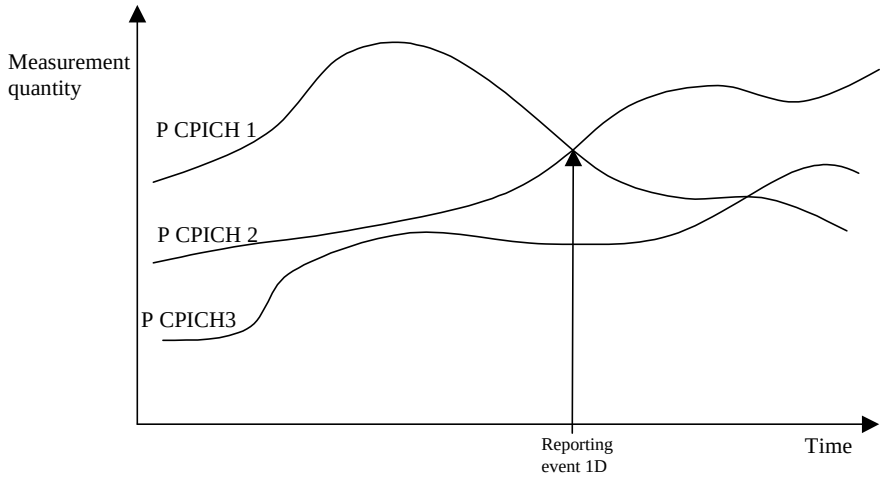

Figure 64: A primary CPICH becomes better than the previously best primary CPICH

~~If any of the primary CPICHs within the reporting range becomes better than the previously best primary CPICH, and event 1D has been ordered by UTRAN then this event shall trigger a report to be sent from the UE. The corresponding report contains (at least) the new best primary CPICH.~~

14.1.2.5 Reporting event 1E: A Primary CPICH becomes better than an absolute threshold

When event 1E is configured in the UE, the UE shall:
If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if that primary CPICH is part of cells allowed to trigger the event according to "Triggering condition 2", and that primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1E_EVENTS:

  include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1E_EVENTS;

- send a measurement report with IEs set as below:

  In "intra-frequency event results; "Intrafrequency event identity" to "1e" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1e event that is triggered without a report being sent.

  "measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1E_EVENTS:

- Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1E_EVENTS;

Upon transition to CELL_DCH the UE shall:

- Include the primary CPICH of all cells in the current active set that fulfil the equations 1 or 2 according to the "Measurement quantity" of event 1e into the "cells triggered" in the variable TRIGGERED_1E_EVENTS.

Equation 1 (Triggering condition for pathloss)

$M_{New} \leq T_{1e} - H_{1e}/2$, Hans: the formula is new

Equation 2 (Triggering condition for all the other measurement quantities)

$M_{New} \geq T_{1e} + H_{1e}/2$, Hans: the formula is new

Equation 3 (Leaving triggering condition for pathloss)

$M_{New} \geq T_{1e} + H_{1e}/2$, Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$M_{New} \leq T_{1e} - H_{1e}/2$, Hans: the formula is new

The variables in the formula are defined as follows:

M_{New} is the measurement result of a cell that becomes better than an absolute threshold

T_{1e} is an absolute threshold

H_{1e} is the hysteresis parameter for the event 1e.

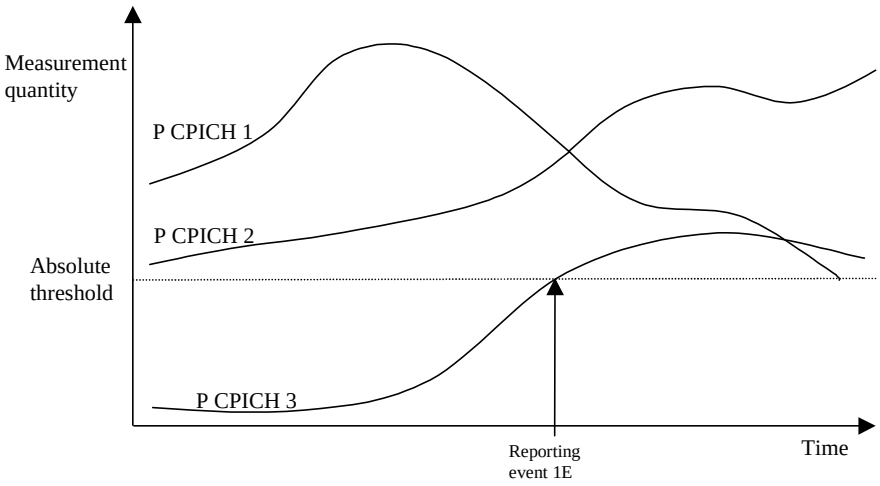

Figure 65: Event-triggered report when a Primary CPICH becomes better than an absolute threshold

~~When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the Measurement quantity of a Primary CPICH becomes better than an absolute threshold. The corresponding report contains (at least) the involved Primary CPICH.~~

Event 1E may be used for triggering a measurement report, which includes cells, which the UE has detected without having received a neighbour cell list.

14.1.2.6 Reporting event 1F: A Primary CPICH becomes worse than an absolute threshold

When event 1F is configured in the UE, the UE shall:

If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if that primary CPICH is part of cells allowed to trigger the event according to "Triggering condition 1", and that

primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1F_EVENTS:

include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1F_EVENTS;

- send a measurement report with IEs set as below:

In "intra-frequency event results; "Intrafrequency event identity" to "1f" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1f event that is triggered without a report being sent.

"measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1F_EVENTS:

- Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1F_EVENTS;

Upon transition to CELL_DCH the UE shall:

- Include the primary CPICH of all cells that fulfil the equations 1 or 2 according to the "Measurement quantity" of event 1f into the "cells triggered" in the variable TRIGGERED_1F_EVENTS.

Equation 1 (Triggering condition for pathloss)

$M_{New} \geq T_{1f} + H_{1f}/2$, Hans: the formula is new

Equation 2 (Triggering condition for all the other measurement quantities)

$M_{New} \leq T_{1f} - H_{1f}/2$, Hans: the formula is new

Equation 3 (Leaving triggering condition for pathloss)

$M_{New} \leq T_{1f} - H_{1f}/2$, Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$M_{New} \geq T_{1f} + H_{1f}/2$, Hans: the formula is new

The variables in the formula are defined as follows:

M_{New} is the measurement result of a cell that becomes worse than an absolute threshold

T_{1f} is an absolute threshold

H_{1f} is the hysteresis parameter for the event 1f.

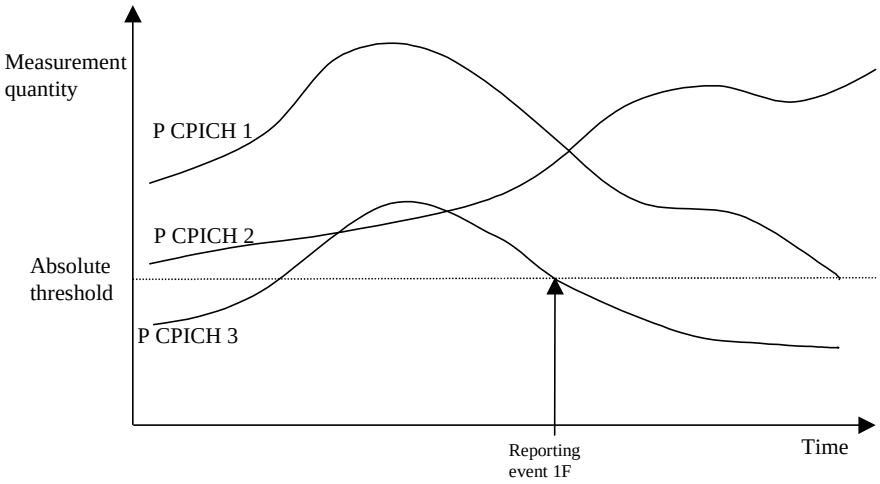

Figure 66: Event-triggered report when a Primary CPICH becomes worse than an absolute threshold

~~When this event is ordered by the UTRAN in a measurement control message the UE shall send a report when a primary CPICH becomes worse than an absolute threshold. The corresponding report contains (at least) the involved Primary CPICH.~~

14.2 Inter-frequency measurements

The frequency quality estimate used in events 2a, 2b 2c, 2d and 2e is defined as:

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = W_j \cdot 10 \cdot Log\left(\sum_{i=1}^{N_{A\,j}} M_{i\,j}\right) + (1 - W_j) \cdot 10 \cdot LogM_{Best\ j} - H,$$

The variables in the formula are defined as follows:

$\boldsymbol{Q_{frequency\ j}}$ is the estimated quality of the active set on frequency j

$M_{\text{frequency j}}$ is the estimated quality of the active set on frequency j.

$M_{i\,j}$ is a measurement result of cell i in the active set on frequency j.

$N_{A\,j}$ is the number of cells in the active set on frequency j.

$M_{\text{Best j}}$ is the measurement result of the ~~strongest~~ cell in the active set on frequency j with the highest measurement result.

W_j is a parameter sent from UTRAN to UE and used for frequency j

H is the hysteresis parameter

If the measurement result is CPICH-Ec/No then $\boldsymbol{M_{New}}$, $\boldsymbol{M_{i\,j}}$ and $\boldsymbol{M_{Best}}$ are expressed as ratios.

If the measurement result is CPICH-RSCP or PCCPCH-RSCP then $\boldsymbol{M_{New}}$, $\boldsymbol{M_{i\,j}}$ and $\boldsymbol{M_{Best}}$ are expressed in [mW].

14.3 Inter-RAT measurements

The estimated quality of the active set in UTRAN in events 3a is defined as:

$$Q_{UTRAN} = 10 \cdot LogM_{UTRAN} = W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best},$$

The variables in the formula are defined as follows:

$\boldsymbol{Q_{UTRAN}}$ is the estimated quality of the active set on the currently used UTRAN frequency

M_{UTRAN} is the estimated quality of the active set on currently used UTRAN frequency expressed in another unit.

M_i is a measurement result of cell i in the active set.

N_A is the number of cells in the active set.

M_{Best} is the measurement result of the ~~strongest~~ cell in the active set with the highest measurement result.

W is a parameter sent from UTRAN to UE.

$\boldsymbol{M_{UTRAN}}$, $\boldsymbol{M_i}$ and $\boldsymbol{M_{Best}}$ are expressed in [mW].

14.3.1.2 Event 3b: The estimated quality of other system is below a certain threshold

When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the estimated quality of the other system is below the value of the IE " Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system ~~and the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency~~.

14.3.1.3 Event 3c: The estimated quality of other system is above a certain threshold

When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the estimated quality of the other system is above the value of the IE " Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system ~~and the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency~~.

14.4 Traffic Volume Measurements

14.4.1 Traffic Volume Measurement Quantity

For traffic volume measurements in the UE only one quantity is compared with the thresholds. This quantity is Transport Channel Traffic Volume [15] (which equals the sum of Buffer Occupancies of RBs multiplexed onto a transport channel) in number of bytes. In order to support a large variation of bit rates and RLC buffer size capabilities, a non-linear scale is used. Since, for each RB, the expected traffic includes both new and retransmitted RLC PDUs and potentially existing Control PDUs, all these should be included in the Buffer Occupancy measure. It should also be noted that traffic volume measurements are only applicable for acknowledged and unacknowledged mode.
According to what is stated in the Measurement Control message, the UE should support measuring of RLC Buffer Payload, Average of RLC Buffer Payload, and Variance of RLC Buffer Payload for a specific RB, RBs multiplexed onto the same Transport channel and the total UE traffic volume (the same as one transport channel for a UE that uses RACH). When the RLC buffer payload, Average of RLC buffer payload or Variance of RLC buffer payload is reported, the measured quantity shall be rounded upwards to the closest higher value possible to report.

3GPP TSG-RAN WG2 Meeting #21
Busan, Korea, May 21st-25th, 2001

Tdoc R2-011249

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 762** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Measurement corrections
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-05-25
Category:	⌘	**A**
Release:	⌘	REL-4

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)

Reason for change: ⌘

Ambiguous measurement handling need to be corrected.
Spelling errors.

A strict event description for all measurements is important for aligned UE behaviour and a possibility for the network to rely on measurement reports.

The current description of the traffic volume measurement is inconsistent and unclear.

Improvement of description and definition of units used

Events 1A and 1B are called respectively “A Primary CPICH enters the Reporting Range” and “A Primary CPICH leaves the Reporting Range”. However, in the definition of both events a constant parameter value is used (“R is the reporting range”), which could be mistaken for the dynamic reporting range, as defined by the formulas in section 14. This confusion originates from the merging of different events. As example, in section 14.1.2.2 it is stated: “the weakening cell must continuously stay below the reporting range for the given time period before the UE may send a measurement report”, which may conflict with the current definition of R.

The definition of Time To Trigger in the semantics description of the Tabular is not accurate (Indicates the period of time between the timing of event detection and the timing of sending Measurement Report). It conflicts with the correct definition included in section 14 (the report is triggered only after the conditions for the event have existed for the specified time-to-trigger)

Summary of change: ⌘

1. In section 8.4.1.3: it is clarified that if a MEASUREMENT CONTROL message is received by the UE with a “measurement command” set to “setup” while there is already a measurement stored in the variable

"MEASUREMENT_IDENTITY" for the "measurement identity" specified, the old information shall be overwritten. If the "measurement command" was set to "modify" while nothing was stored, the UE shall set the variable "CONFIGURATION_INCOMPLETE" to TRUE.

2. In section 8.4.1.7.1: it is clarified that when transition occurs from CELL_FACH to CELL_DCH, the UE shall only delete a measurement stored in the variable "MEASUREMENT_IDENTITY" with "measurement validity" set to "CELL_DCH" if a cell reselection was performed whilst out of CELL_DCH after the measurement was stored. Otherwise, the measurement information read from System Information Blocks 11 and 12 would be removed when going to CELL_DCH. Also clarify which IE give reporting criteria for CELL_DCH state.
3. In sections 8.4.1.7.2: a similar text as the one in 8.4.1.7.1 was added, to clarify that if a cell reselection has occurred out of CELL_DCH since they were stored the measurements with "measurement validity" set to "CELL_DCH" shall be removed.
4. In 8.4.1.7.4 the text on Inter-RAT measurements was corrected not to use measurement validity since this is not used for Inter-RAT measurements.
5. In section 8.4.1.8.1 and 8.4.1.9.1: "begin" has been replaced by "begin or continue" in the first bullets of the list, since the cells that the UE was monitoring in idle mode could be the same as the ones it monitors in CELL_FACH.
6. In 10.3.7.47 a Note was removed that is currently present in 10.3.7.40 already.
7. Some editorial changes were corrected (typing errors)
8. The behaviour of when to send measurement reports for the 1x events has been clarified according to semantics description text in the tabular. It has been re-written in the form of other parts of the specifications with normative text instead of relying on the figure representation.
9. Event 1x has been clarified with when the event can be re-triggered, different formulas to cover the hysteresis correct, inclusion of time to trigger in the description, inclusion of different parts into the reports. Also initial status on variables has been included to prevent a UE starting in CELL_DCH to send reports to give status that is known in the network.
10. Pathloss formulas in event 1a, b have been changed so that the smallest term dominates the sum instead of the largest.
11. It is clarified that the value closest to the measured value shall be reported in the traffic volume measurement.
12. It is clarified that the timer "pending time after trigger" is in ms and not in seconds.
13. The tabular for "traffic volume measurement quantity" is clarified
14. 8.4 Triggering event 1G for TDD cells is added.
15. 8.4.1.4a, 8.6.7.1 Spelling correction IE "failure cause" has value " Configuration incomplete";
16. 8.4.1.7.4 Spelling correction IE "UE state" has been assigned to value "all states except CELL_DCH"
17. 8.6.7.1 Correction: Traffic volume measurement is valid, if the IE "traffic volume measurement object" has been included, otherwise it is not.

18. 8.4.2.2 Spelling correction IE "Periodical reporting" is corrected to IE "Periodical reporting criteria"
19. 8.6.7.2 IE "Measured results on RACH" replaces IE "Measurement results on RACH"
20. 8.6.7.2 Filter Coefficient is defined in 10.3.7.9. Default value FC0 means no filtering is applied. Due to misleading explanation filter coefficient Default FC1 is used in ASN1. Therefore the explanation in 10.3.7.9 is modified and in ASN1 Code default value for FilterCoefficient DEFAULT FC0 is corrected accordingly.
21. 10.3.7.73 traffic volume measurement "object" instead of "objects"
22. The description of variables used in the formulas was improved.
23. In 14.1.2.2 in pathloss formula H_{1a} was corrected to H_{1b}
24. In 14.3.1.2 and 14.3.1.3 the reporting of information specific to TDD or FDD cells on non used frequency was removed, because it does not apply to these events
25. It is proposed to specify that R is the reporting range constant
26. It is proposed to remove the semantics description from the Tabular definition of Time To Trigger

Consequences if not approved: ⌘

The ambiguities in the text could result in unexpected UE behaviour.

Specification of events for measurements will be unclear resulting in different behaviour in different implementations of the UE.

Wrong parameters in ASN1 code, inconsistencies between text, tabular description and ASN1 Code might lead to misinterpretations. Requirements would remain ambiguous and may lead to erroneous implementations.

Units of measurement results used in formulas as variables remain undefined.

Backward compatibility:
1-8,11, 13-19, 21-26 Spelling errors and Correction to functionality where the specification was ambiguous or not sufficiently explicit.
Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

Most of the clarifications made in procedure text are already visible in section 10 tabular format and also in the ASN.1 in what is actually signalled. This will not cause any backward compatibility if comments in the tabular have been followed.

9, 12 Correction to a functionality where the specification was containing contradictions.
Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

On 9 and the correction on Hysteresis, if interpreted in another way than what is agreed in this CR, the change is not backward compatible. If a UE has a implemented a different version than UTRAN the UE will trigger events reporting Hyst/2 too late and stop triggering Hyst/2 too early for event 1a and 1b.
On 12 if a UE has implemented a different version than UTRAN it will interpret time to trigger used in several messages according to seconds instead of ms causing event reports to be sent at the wrong point in time.

	10 Functionality is found erroneous in release 99 a non backwards compatible change corrects the function. Correction of error in pathloss summation for event 1a and 1b to work as intended when several cells are within active set and weight parameter is used. If the UE has implemented a different version than UTRAN a slight degradation of pathloss event triggering for active sets with more than one RL and W set to <> 0. 20 Functionality is found erroneous in release 99 a non backwards compatible change corrects the function. This change on default value on filter coefficient is not backward compatible, however, this change will not cause the ASN.1 decoder to reject the message. Instead 0.7 will be applied as filter instead of no filtering (=1). This will result in a slight degradation of measurement reporting if filtering is applied using the default value and if the UE and UTRAN do not have the same version implemented.

Clauses affected:	⌘	8.4, 8.4.1.3, 8.4.1.4a, 8.4.1.7, 8.4.1.7.1, 8.4.1.7.2, 8.4.1.7.3, 8.4.1.7.4, 8.4.1.8, 8.4.1.8.1, 8.4.1.9.1, 8.4.1.9a.2, 8.4.2.2, 8.6.7.1, 8.6.7.2, 8.6.7.4, 8.6.7.5, 8.6.7.10, 8.6.7.13, 8.6.7.14, 8.6.7.15, 8.6.7.16, 8.6.7.17, 8.6.7.18, 10.3.7.39, 10.3.7.47, 10.3.7.64, 10.3.7.71, 10.3.7.72, 10.3.7.73, 11, 13.4.x1 (new), 13.4.x2 (new), 13.4.x3 (new), 13.4.x4 (new), 13.4.x5 (new), 13.4.x6 (new), 14.1.2, 14.1.2.1, 14.1.2.2, 14.1.2.3, 14.1.2.4, 14.1.2.5, 14.1.2.6, 14.2, 14.3, 14.3.1.2, 14.3.1.3, 14.4.1		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘
Other comments:	⌘	According to decision on merging of CRs; Changes from R2-010913 (except HCS change that was part of the inconsistency discussion at RAN2 #21 and is now part of another CR) and R2-010892 have been included. Also R2-010934 change have been taken into account. Revision 1 includes changes from R2-011101 and R2-011136. Rel'99 CR is included in R2-011248 CR761r1.	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

8.4 Measurement procedures

The UE measurements are grouped into 7 different categories, according to what the UE should measure.
The different types of measurements are:

- **Intra-frequency measurements**: measurements on downlink physical channels at the same frequency as the active set. Detailed description is found in subclause 14.1.

- **Inter-frequency measurements**: measurements on downlink physical channels at frequencies that differ from the frequency of the active set. Detailed description is found in subclause 14.2.

- **Inter-RAT measurements**: measurements on downlink physical channels belonging to another radio access technology than UTRAN, e.g. PDC or GSM. Detailed description is found in subclause 14.3.

- **Traffic volume measurements**: measurements on uplink traffic volume. Detailed description is found in subclause 14.4.

- **Quality measurements**: Measurements of quality parameters, e.g. downlink transport block error rate. Detailed description is found in subclause 14.5.

- **UE-internal measurements**: Measurements of UE transmission power and UE received signal level. Detailed description is found in subclause 14.6.

- **UE positioning measurements:** Measurements of UE position. Detailed description is found in subclause 14.7.

The UE shall support a number of measurements running in parallel (the number of parallel measurements to be supported is specified in [19] and [20]). The UE shall also support that each measurement is controlled and reported independently of every other measurement.
Cells that the UE is monitoring (e.g. for handover measurements) are grouped in the UE into three different categories:

1. Cells, which belong to the **active set.** User information is sent from all these cells. In FDD, the cells in the active set are involved in soft handover. In TDD the active set always comprises of one cell only.

2. Cells, which are not included in the active set, but are monitored according to a neighbour list assigned by the UTRAN belong to the **monitored set.**

3. Cells detected by the UE, which are neither included in the active set nor in the monitored set belong to the **detected set.** Reporting of measurements of the detected set is only required for intra-frequency measurements made by UEs in CELL_DCH state.

UTRAN may control a measurement in the UE either by broadcast system information and/or by transmitting a MEASUREMENT CONTROL message. The latter message includes the following measurement control information:

1. **Measurement identity**: A reference number that should be used by the UTRAN when setting up, modifying or releasing the measurement and by the UE in the measurement report.

2. **Measurement command**: One out of three different measurement commands.

   - Setup: Setup a new measurement.

   - Modify: Modify a previously defined measurement, e.g. to change the reporting criteria.

   - Release: Stop a measurement and clear all information in the UE that are related to that measurement.

3. **Measurement type**: One of the types listed above describing what the UE shall measure.

   Presence or absence of the following control information depends on the measurement type

4. **Measurement objects:** The objects the UE shall measure, and corresponding object information.

5. **Measurement quantity:** The quantity the UE shall measure. This also includes the filtering of the measurements.

6. **Reporting quantities:** The quantities the UE shall include in the report in addition to the quantities that are mandatory to report for the specific event.

7. **Measurement reporting criteria**: The triggering of the measurement report, e.g. periodical or event-triggered reporting.

8. **Measurement Validity**: Defines in which UE states the measurement is valid.

9. **Measurement reporting mode**: This specifies whether the UE shall transmit the measurement report using AM or UM RLC.

10. **Additional measurement identities**: A list of references to other measurements. When this measurement triggers a measurement report, the UE shall also include the reporting quantities for the measurements referenced by the additional measurement identities.

All these measurement parameters depend on the measurement type and are described in more detail in clause 14.
When the reporting criteria are fulfilled, i.e. a specified event occurred or the time since last report indicated for periodical reporting has elapsed, the UE shall send a MEASUREMENT REPORT message to UTRAN.
In CELL_FACH, CELL_PCH or URA_PCH state, the UE shall perform measurements according to the measurement control information included in System Information Block Type 12 or System Information Block Type 11, according to subclause 8.1.1.6.11. The UE may also be requested to perform traffic volume measurements according to the measurement control information in a MEASUREMENT CONTROL message.
In CELL_DCH state, the UE may be requested to report measurements from any of the measurement types. The UE may also be requested to report cells from the detected set. The triggering event for the UE to send a MEASUREMENT REPORT message for detected set cells is defined in measurement events 1A and 1E for FDD cells and in measurement event 1G for TDD cells in clause 14.
In order to receive information for the immediate establishment of macrodiversity (FDD) or to support the DCA algorithm (TDD), the UTRAN may also indicate to the UE in System Information Block Type 11 or System Information Block Type 12, to append radio link related measurement reports to the following messages when they are sent on common transport channels (i.e., RACH, CPCH, USCH):

- RRC CONNECTION REQUEST message sent to establish an RRC connection;

- INITIAL DIRECT TRANSFER message sent uplink to establish a signalling connection;

- UPLINK DIRECT TRANSFER message to transfer NAS messages for an existing signalling connection;

- CELL UPDATE message sent to respond to a UTRAN originated page;

- MEASUREMENT REPORT message sent to report uplink traffic volume;

- PUSCH CAPACITY REQUEST message sent to request PUSCH capacity (TDD only).

8.4.1.3 Reception of MEASUREMENT CONTROL by the UE

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in subclause 8.6 unless otherwise specified below.
The UE shall:

- read the IE "Measurement command";
- if the IE "measurement command" has the value "setup":
  - store this measurement in the variable MEASUREMENT_IDENTITY according to the IE "measurement identity", possibly overwriting the measurement previously stored with that identity;
  - for measurement types "inter-RAT measurement" or "inter-frequency measurement":
    - if, according to its measurement capabilities, the UE requires compressed mode to perform the measurements and a compressed mode pattern sequence with an appropriate measurement purpose is simultaneously activated by the IE "DPCH compressed mode status info"; or
    - if, according to its measurement capabilities, the UE does not require compressed mode to perform the measurements:
      - begin measurements according to the stored control information for this measurement identity;
  - for any other measurement type:
    - begin measurements according to the stored control information for this measurement identity.
  - if the IE "Measurement command" has the value "modify":
    - for all measurement control present in the MEASUREMENT CONTROL message:
      - if a measurement was stored in the variable MEASUREMENT_IDENTITY associated to the identity by the IE “measurement identity”:
        - replace the corresponding information stored in variable MEASUREMENT_IDENTITY associated to the identity indicated by the IE "measurement identity";
        - resume the measurements according to the new stored measurement control information.
      - Otherwise, set the variable CONFIGURATION_INCOMPLETE to TRUE.
- if the IE "measurement command" has the value "release":
  - terminate the measurement associated with the identity given in the IE "measurement identity";
  - clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY.
- if the IE "DPCH Compressed Mode Status Info" is present, the UE shall:
  - if pattern sequence corresponding to IE "TGPSI" is already active (according to "TGPS Status Flag"):
    - deactivate this pattern sequence at the beginning of the frame indicated by IE "TGPS reconfiguration CFN" received in the message;

- after the time indicated by IE "TGPS reconfiguration CFN" has elapsed:
    - activate the pattern sequence stored in the variable TGPS_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "active" at the time indicated by IE "TGCFN"; and
    - begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
    - if the values of IE "TGPS reconfiguration CFN" and IE "TGCFN" are equal:
        - start the concerned pattern sequence immediately at that CFN;
- not alter pattern sequences stored in variable TGPS_IDENTITY, but not identitifed in IE "TGPSI"
- clear the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS;
- And the procedure ends.

8.4.1.4a Configuration Incomplete

If the variable CONFIGURATION_INCOMPLETE is set to TRUE, the UE shall:

- retain the measurement configuration that was valid before the MEASUREMENT CONTROL message was received;
- set the IE "RRC transaction identifier" in the MEASUREMENT CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS and clear that entry;
- clear the variable CONFIGURATION_INCOMPLETE;
- set the cause value in IE "failure cause" to "~~incomplete configuration~~Configuration incomplete";
- submit the MEASUREMENT CONTROL FAILURE message to lower layers for transmission on the DCCH using AM RLC;
- continue with any ongoing processes and procedures as if the invalid MEASUREMENT CONTROL message has not been received;
- And the procedure ends.

8.4.1.7 Measurements after transition from CELL_FACH to CELL_DCH state

The UE shall obey the following rules for different measurement types after transiting from CELL_FACH to CELL_DCH state:

8.4.1.7.1 Intra-frequency measurement

Upon transition from CELL_FACH to CELL_DCH state, the UE shall:

- retrieve each set of measurement control information of measurement type "intra-frequency" stored in the variable MEASUREMENT_IDENTITY; and
  - if the IE "measurement validity" for a measurement has been assigned the value "CELL_DCH"; ~~and~~
    - if the UE has not performed a cell reselection whilst out of CELL_DCH state:
      - resume the measurement reporting.
    - if the UE has performed a cell reselection whilst out of CELL_DCH state and the cell reselection has occurred after the measurement control information was stored:
      - delete the measurement associated with the variable MEASUREMENT_I~~N~~DENTITY.
- if no intra-frequency measurements applicable to CELL_DCH state are stored in the variable MEASUREMENT_IDENTITY:
  - continue monitoring the list of neighbouring cells assigned in the IE "intra-frequency cell info" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);
  - if the IE "intra-frequency measurement reporting criteria" was included in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11):
    - send the MEASUREMENT REPORT message when reporting criteria in IE "Reporting information for CELL_DCH" are fulfilled;

8.4.1.7.2 Inter-frequency measurement

Upon transition from CELL_FACH to CELL_DCH state, the UE shall:

- stop monitoring the list of cells assigned in the IE "inter-frequency cell info" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);
- retrieve each set of measurement control information of measurement type "inter-frequency" stored in the variable MEASUREMENT_IDENTITY; and
  - if the IE "measurement validity" for a measurement has been assigned the value "CELL_DCH";
    - if the UE has not performed a cell reselection whilst out of CELL_DCH state:
      - resume the measurement reporting.
    - if the UE has performed a cell reselection whilst out of CELL_DCH state and the cell reselection has occurred after the measurement control information was stored:
      - delete the measurement associated with the variable MEASUREMENT_IDENTITY.

~~if the UE has previously stored an inter-frequency measurement, for which the IE "measurement validity" for this measurement has been included, and the IE "UE state" has been assigned the value "CELL_DCH":~~

~~- resume this measurement and associated reporting.~~

8.4.1.7.3 Inter-RAT measurement

The UE shall:

- stop monitoring the list of cells assigned in the IE "inter-frequency system info" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);

~~if the UE has previously stored an inter-RAT measurement, for which the IE "measurement validity" for this measurement has been included, and the IE "UE state" has been assigned the value "CELL_DCH":~~

~~- resume this measurement and associated reporting.~~

8.4.1.7.4 Traffic volume measurement

Upon transition from CELL_FACH to CELL_DCH state, the UE shall:

- retrieve each set of measurement control information of measurement type "traffic volume" stored in the variable MEASUREMENT_IDENTITY;
  - if the optional IE "measurement validity" for this measurement has not been included:
    - delete the measurement associated with the variable MEASUREMENT_IDENTITY;
  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "~~all-but-CELL_DCH~~all states except CELL_DCH":
    - stop measurement reporting; and
    - save the measurement associated with the variable MEASUREMENT_IDENTITY to be used after the next transition to CELL_FACH state;
  - if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":
    - continue measurement reporting;
  - if the IE "measurement validity" has been included and the IE "UE state" has been assigned to value "CELL_DCH":
    - resume this measurement and associated reporting;
- if no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_DCH state:
  - continue an ongoing traffic volume type measurement, assigned in System Information Block type 11 (or System Information Block type 12, according to subclause 8.1.1.6.11);
- if the UE in CELL_DCH state receives a MEASUREMENT CONTROL message, which indicates the same measurement identity as that stored in variable MEASUREMENT_IDENTITY:
  - update the stored information with the traffic volume measurement control information in variable MEASUREMENT_IDENTITY.

8.4.1.8 Measurements after transition from idle mode to CELL_DCH state

The UE shall obey the following rules for different measurement types after transiting from idle mode to CELL_DCH state:

8.4.1.8.1 Intra-frequency measurement

Upon transition from idle mode to CELL_DCH state, the UE shall:

- begin or continue monitoring the list of cells assigned in the IE "intra-frequency cell info" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);

- if the "intra-frequency measurement reporting criteria" IE was included in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11):

  - ~~being~~ begin measurement reporting according to the IE.

8.4.1.9 Measurements after transition from idle mode to CELL_FACH state

The UE shall obey the follow rules for different measurement types after transiting from idle mode to CELL_FACH state:

8.4.1.9.1 Intra-frequency measurement

Upon transition from idle mode to CELL_FACH state, the UE shall:

- begin or continue monitoring cells listed in the IE "intra-frequency cell info" received in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);

- if the UE receives the IE "Intra-frequency reporting quantity for RACH Reporting" and IE "Maximum number of Reported cells on RACH" from System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11):

  - use this information for reporting measured results in RACH messages.

8.4.1.9a.2 Inter-frequency measurement

Upon transition from connected mode to idle mode, the UE shall:

- stop monitoring inter-frequency cells listed in the IE "inter-frequency cell info" received in System Information Block type 12 (if System Information Block type 12 is transmitted in the cell, according to 8.1.1.6.11);

- begin monitoring inter-frequency cells listed in the IE "inter-frequency cell info" received in System Information Block type 11.

8.4.2.2 Initiation

In CELL_DCH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are met for any ongoing measurements that are being performed in the UE.
In CELL_FACH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are met for any ongoing traffic volume measurement that is being performed in the UE.
In TDD, if the Radio Bearer associated with the MEASUREMENT_IDENTITY fulfilling the reporting criteria for an ongoing traffic volume measurement is mapped on transport channel of type USCH, the UE shall initiate the "PUSCH CAPACITY REQUEST" procedure instead of transmitting a MEASUREMENT REPORT (TDD Only).
In CELL_PCH or URA_PCH state, the UE shall first perform the cell update procedure according to subclause 8.3.1, using the cause "uplink data transmission", in order to transit to CELL_FACH state and then transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are fulfilled for any ongoing traffic volume measurement which is being performed in the UE.
The reporting criteria are fulfilled if either:

- the first measurement has been completed according to the requirements set in [19] or [20] for a newly initiated measurement with periodic reporting; or

- the time period indicated in the stored IE "Periodical reporting criteria" has elapsed since the last measurement report was transmitted for a given measurement; or

- an event in stored IE "Measurement reporting criteria" was triggered. Events and triggering of reports for different measurement types are described in detail in clause 14.

For the measurement, which triggered the MEASUREMENT REPORT message, the UE shall:

- set the IE "measurement identity" to the measurement identity, which is associated with that measurement in variable MEASUREMENT_IDENTITY;

- set the IE "measured results" to include measurements according to the IE "reporting quantity" of that measurement stored in variable MEASUREMENT_IDENTITY; and

  - if all the reporting quantities are set to "false":

    - not set the IE "measured results";

- set the IE "Measured results" in the IE "Additional measured results" according to the IE "reporting quantity" for all measurements associated with the measurement identities included in the IE "additional measurements" stored in variable MEASUREMENT_IDENTITY of the measurement that triggered the measurement report; and

  - if more than one additional measured results are to be included:

    - sort them in ascending order according to their IE "measurement identity" in the MEASUREMENT REPORT message;

- if the MEASUREMENT REPORT message was triggered by an event (i.e. not a periodical report):

  - set the IE "Event results" according to the event that triggered the report.

The UE shall:

- transmit the MEASUREMENT REPORT message on the uplink DCCH using either AM or UM RLC according to the stored IE "measurement reporting mode" associated with the measurement identity that triggered the report.

When the MEASUREMENT REPORT message has been submitted to lower layers for transmission:

- The procedure ends.

8.6.7 Measurement information elements

8.6.7.1 Measurement validity

If the optional IE "measurement validity" for a given measurement has not been included in measurement control information, the UE shall delete the measurement associated with the variable MEASUREMENT IDENTITY after the UE makes a transition to a new state.
If the IE "measurement validity" for this measurement has been included in measurement control information, the UE shall save the measurement associated with the variable MEASUREMENT IDENTITY. The IE "UE state" defines the scope of resuming the measurement.
If the "UE state" is defined as "all states", the UE shall continue the measurement after making a transition to a new state. This scope is assigned only for traffic volume type measurements and can only be applied by the UE if the IE "traffic volume measurement object" has ~~not~~ been included in measurement control information. If the IE "traffic volume measurement object" has not been included in measurement control information, the UE shall not save the measurement control information in variable MEASUREMENT IDENTITY, but shall send a MEASUREMENT CONTROL FAILURE message to the UTRAN with failure cause "Configuration incomplete ~~configuration~~".
If the "UE state" is defined as "all states except CELL_DCH", the UE shall store the measurement to be resumed after a subsequent transition from CELL_DCH state to any of the other states in connected mode. This scope is assigned only for traffic volume type measurements.
If the "UE state" is defined as "CELL_DCH", the UE shall store the measurement to be resumed after a subsequent transition to CELL_DCH state. After cell re-selection, the UE shall delete any ongoing intra-frequency or inter-frequency and inter-RAT type measurement associated with the variable MEASUREMENT IDENTITY. Other measurement types shall, however, be continued regardless of cell reselection.

8.6.7.2 Filter coefficient

If the IE "Filter coefficient" is received the UE shall apply filtering of the measurements for that measurement quantity according to the formula below. This filtering shall be performed by the UE before UE event evaluation. The UE shall also filter the measurements reported in the IE "Measured results". The filtering shall not be performed for the measurements reported in the IE "~~Measurement~~ Measured results on RACH" and for cell-reselection in connected or idle mode.
The filtering shall be performed according to the following formula.

$$F_n = (1-a) \cdot F_{n-1} + a \cdot M_n$$

The variables in the formula are defined as follows:
F_n is the updated filtered measurement result
F_{n-1} is the old filtered measurement result
M_n is the latest received measurement result from physical layer measurements, the unit used for M_n is the same unit as the reported unit in the MEASUREMENT REPORT message or the unit used in the event evaluation.
$a = 1/2^{(k/2)}$, where k is the parameter received in the IE "Filter coefficient".
NOTE: if ~~a is set to 1~~ k is set to 0 that will mean no layer 3 filtering.

In order to initialise the averaging filter, F_0 is set to M_1 when the first measurement result from the physical layer measurement is received.
The physical layer measurement results are sampled once every measurement period. The measurement period and the accuracy for a certain measurement is defined in [19] and [20].

8.6.7.4 Intra-frequency measurement quantity

If the IE "Intra-frequency measurement quantity" is received in a MEASUREMENT CONTROL message, the UE shall:

- if the IE "Measurement quantity" is set to "pathloss"; and
- for any intra-frequency cell indicated by the IE "Cells for measurement", the IE "Primary CPICH Tx power" in FDD or the IE "Primary CCPCH TX Power" in TDD in the intra frequency cell info list in the variable CELL_INFO_LIST is not present:
  - set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE;
- else:
  - configure the measurement quantity accordingly.

8.6.7.5 Inter-RAT measurement quantity

If the IE "Inter-RAT measurement quantity" is received in a MEASUREMENT CONTROL message and CHOICE system is GSM, the UE shall:

- if IE "BSIC verification required" is set to "required", for cells that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", and that has a "verified" BSIC:
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if IE "BSIC verification required" is set to "not required", for cells that match any of the BCCH ARFCN in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", regardless if the BSIC is "verified" or "non-verified":
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if the IE "Measurement quantity" is set to "pathloss"; and
- for any inter-RAT cell indicated by the IE "Cells for measurement", the IE "Output power" in the inter-RAT cell info list in the variable CELL_INFO_LIST is not present:
  - set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

NOTE: The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

8.6.7.10 Traffic Volume Measurement

If the IE "Traffic Volume Measurement" is received by the UE, the UE shall:
- store the content of the IE to the variable MEASUREMENT_IDENTITY.

If the IE "Traffic volume measurement Object" is not included, the UE shall:
- apply the measurement reporting criteria to all uplink transport channels.

If IE "Traffic volume measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", and if the IE "traffic volume reporting quantity" is included, the UE shall:
- report the measured quantities specified in the IE "traffic volume reporting quantity";
- if the parameter "Average of RLC Buffer Payload for each RB" or the parameter "Variance of RLC Buffer payload for each RB" is set:
  - if the IE "Traffic volume measurement quantity" is not included:
    - set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE;
  - if the IE "Traffic volume measurement quantity" is included;
    - if the parameter "time interval to take an average or a variance" is included:
      - use the time specified in the parameter "time interval to take an average or a variance" to calculate the average and/or variance of RLC Buffer Payload according to the IE "traffic volume reporting quantity";
    - if the parameter "time interval to take an average or a variance" is not included:
      - set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

If IE "Traffic volume measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Traffic volume measurement quantity", IE "Traffic volume reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:
- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.13 Measurement Reporting Mode

If IE "Measurement Reporting Mode" is received by the UE, the UE shall:

- store the contents of the IE "Measurement Report Transfer Mode" in the variable MEASUREMENT_IDENTITY;
- use the indicated RLC mode when sending MEASUREMENT REPORT message(s) related to this measurement;
- ignore IE "Periodical Reporting / Event Trigger Reporting Mode".

If IE "Measurement Reporting Mode" is not received by the UE in MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.14 Inter-frequency measurement

If IE "Inter-frequency measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Inter-frequency measurement quantity", IE "Inter-frequency reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.15 Inter-RAT measurement

If IE "Inter-RAT measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Inter-RAT measurement quantity", IE "Inter-RAT reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.16 Intra-frequency measurement

If IE "Intra-frequency measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Intra-frequency measurement quantity", IE "Intra-frequency reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.17 Quality measurement

If IE "Quality measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Quality reporting quantity" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

8.6.7.18 UE internal measurement

If IE "UE internal measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "UE internal measurement quantity" or IE "UE internal reporting quantity" is not received, the UE shall:

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT_IDENTITY;
- set the variable CONFIGURATION_~~INCOMPETE~~INCOMPLETE to TRUE.

10.3.7.27 Inter-RAT measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT cell info list	OP		Inter-RAT cell info list 10.3.7.23	Measurement object
Inter-RAT measurement quantity	OP		Inter-RAT measurement quantity 10.3.7.29	
Inter-RAT reporting quantity	OP		Inter-RAT reporting quantity 10.3.7.32	
Reporting cell status	CV-*reporting*		Reporting cell status 10.3.7.61	
CHOICE report criteria	MP			
>Inter-RAT measurement reporting criteria			Inter-RAT measurement reporting criteria 10.3.7.30	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

Condition	Explanation
reporting	This IE is optional if the CHOICE "report criteria" is equal to "periodical reporting criteria" or "No reporting", otherwise the IE is not needed

10.3.7.39 Intra-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an intra-frequency measurement. All events concerning intra-frequency measurements are labelled 1x where x is a, b, c….
Event 1a: A Primary CPICH enters the Reporting Range (FDD only).
Event 1b: A Primary CPICH leaves the Reporting Range (FDD only).
Event 1c: A Non-active Primary CPICH becomes better than an active Primary CPICH (FDD only).
Event 1d: Change of best cell [Note 1] (FDD only).
Event 1e: A Primary CPICH becomes better than an absolute threshold (FDD only).
Event 1f: A Primary CPICH becomes worse than an absolute threshold (FDD only).
Event 1g: Change of best cell in TDD.
Event 1h: Timeslot ISCP below a certain threshold (TDD only).

Event 1i: Timeslot ISCP above a certain threshold (TDD only).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeasEvent>		
>Intra-frequency event identity	MP		Intra-frequency event identity 10.3.7.34	
>Triggering condition 1	CV – clause 0		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells)	Indicates which cells can trigger the event
>Triggering condition 2	CV – clause 6		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells, Detected set cells, Detected set cells and monitored set cells)	Indicates which cells can trigger the event
>Reporting Range Constant	CV – clause 2		Real(0..14.5 by step of 0.5)	In dB. In event 1a,1b.
>Cells forbidden to affect Reporting range	CV – clause 1	1 to <maxCellMeas>		In event 1a,1b
>>CHOICE *mode*	MP			
>>>FDD				
>>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>>TDD				
>>>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57	
>W	CV – clause 2		Real(0.0..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0..7.5 by step of 0.5)	In dB.
>Threshold used frequency	CV-*clause 3*		Integer (-115..165)	Range used depend on measurement quantity. CPICH RSCP -115..-25 dBm CPICH Ec/No -24..0 dB Pathloss 30..165dB ISCP -115..-25 dBm
>Reporting deactivation threshold	CV–*clause 4*		Integer(0, 1, 2, 3, 4, 5, 6, 7)	In event 1a Indicates the maximum number of cells allowed in the active set in order for event 1a to occur.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				0 means not applicable .
>Replacement activation threshold	CV-*clause 5*		Integer(0, 1, 2, 3, 4, 5, 6, 7)	In event 1c Indicates the minimum number of cells allowed in the active set in order for event 1c to occur. 0 means not applicable
>Time to trigger	MP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>Amount of reporting	CV–*clause 7*		Integer(1, 2, 4, 8, 16, 32, 64, Infinity)	
>Reporting interval	CV–*clause 7*		Integer(0, 250, 500, 1000, 2000, 4000, 8000, 16000)	Indicates the interval of periodical reporting when such reporting is triggered by an event. Interval in milliseconds. 0 means no periodical reporting
>Reporting cell status	OP		Reporting cell status 10.3.7.61	

Condition	Explanation
Clause 0	The IE is mandatory if "Intra-frequency event identity" is set to "1b" or "1f", otherwise the IE is not needed
Clause 1	The IE is optional if "Intra-frequency event identity" is set to "1a" or "1b", otherwise the IE is not needed
Clause 2	The IE is mandatory if "Intra-frequency event identity" is set to "1a" or "1b", otherwise the IE is not needed
Clause 3	The IE is mandatory if "Intra-frequency event identity" is set to , "1e", "1f", "1h", "1i" or "1j", otherwise the IE is not needed
Clause 4	The IE is mandatory if "Intra-frequency event identity" is set to "1a", otherwise the IE is not needed
Clause 5	The IE is mandatory if "Intra-frequency event identity" is set to "1c", otherwise the IE is not needed
Clause 6	The IE is mandatory if "Intra-frequency event identity" is set to "1a" or "1e".
Clause 7	The IE is mandatory if "Intra-frequency event identity" is set to "1a" or "1c".

10.3.7.47 Measurement control system information

Information element/Group name	Need	Multi	Type and reference	Semantics description
Use of HCS	MP		Enumerated (Not used, used)	Indicates if the serving cell belongs to a HCS structure
Cell_selection_and_reselection_quality_measure	MP		Enumerated (CPICH Ec/N0, CPICH RSCP)	Choice of measurement (CPICH Ec/N0 or CPICH RSCP) to use as quality measure Q.
Intra-frequency measurement system information	OP		Intra-frequency measurement system information 10.3.7.40	
Inter-frequency measurement system information	OP		Inter-frequency measurement system information 10.3.7.20	
Inter-RAT measurement system information	OP		Inter-RAT measurement system information 10.3.7.31	
Traffic volume measurement system information	OP		Traffic volume measurement system information 10.3.7.73	
UE Internal measurement system information	OP		UE Internal measurement system information 10.3.7.81	

~~NOTE1: The reporting of intra-frequency measurements is activated when state CELL_DCH is entered.~~

10.3.7.64 Time to trigger

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Time to trigger	MP		Integer(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	~~Indicates the period of time between the timing of event detection and the timing of sending Measurement Report.~~ Time in ms

10.3.7.67 Traffic volume measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement results	OP	1 to <maxRB>		
>RB Identity	MP		RB Identity 10.3.4.16	
>RLC Buffers Payload	OP		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K)	In bytes And N Kbytes = N*1024 bytes
>Average of RLC Buffer Payload	OP		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K)	In bytes And N Kbytes = N*1024 bytes
>Variance of RLC Buffer Payload	OP		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K)	In bytes And N Kbytes = N*1024 bytes

10.3.7.71 Traffic volume measurement quantity

Contains the measurement quantity information for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement quantity	MP		Enumerated(RLC buffer payload, Average RLC buffer payload, Variance of RLC buffer payload)	The use of this parameter is described in section 8.6.7.10.
Time Interval to take an average or a variance	CV-*A/V*		Integer(20, 40, ..260, by steps of 20)	In ms

Condition	Explanation
A/V	This IE is present when "Average RLC buffer" or "Variance of RLC buffer payload" is chosen.

10.3.7.72 Traffic volume measurement reporting criteria

Contains the measurement reporting criteria information for a traffic volume measurement.
Event 4a: Transport Channel Traffic Volume [15] exceeds an absolute threshold.

Event 4b: Transport Channel Traffic Volume [15] becomes smaller than an absolute threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH>		
>Uplink transport channel type	MP		Enumerated(DCH,RACH, USCH)	USCH is TDD only
>UL Transport Channel ID	CV-*UL-DCH/USCH*		Transport channel identity 10.3.5.18	
>Parameters required for each Event	OP	1 to <maxMeasperEvent>		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	
>>Reporting Threshold	MP		Enumerated(8,16,32,64,128,256,512,1024,2K,3K,4K,6K,8K,12K,16K,24K,32K,48K,64K,96K,128K,192K,256K,384K,512K,768K)	Threshold in bytes And N Kbytes = N*1024 bytes
>>Time to trigger	OP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>>Pending time after trigger	OP		Integer(250, 500, 1000, 2000, 4000, 8000, 16000)	~~Time in seconds.~~ Indicates the period of time during which it is forbidden to send any new measurement reports with the same Traffic volume event identity even if the triggering condition is fulfilled ~~again~~. Time in milliseconds
>>Tx interruption after trigger	OP		Integer (250, 500, 1000, 2000, 4000, 8000, 16000)	Time in milliseconds. Indicates ~~whether or not~~how long the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.

Condition	Explanation
UL-DCH/USCH	If IE "Uplink transport channel type" is equal to "DCH" or "USCH" (TDD only) this IE is OP. Otherwise the IE is not needed.

10.3.7.73 Traffic volume measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement identity	MD		Measurement identity 10.3.7.48	The traffic volume measurement identity has default value 4.
Traffic volume measurement objects	OP		Traffic volume measurement objects 10.3.7.70	
Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
Measurement validity	OP		Measurement validity 10.3.7.51	
Measurement Reporting Mode	MP		Measurement Reporting Mode 10.3.7.49	
CHOICE reporting criteria	MP			
>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.72	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	

11.3 Information element definitions

```
InterFreqMeasQuantity ::=           SEQUENCE {
    reportingCriteria                   CHOICE {
        intraFreqReportingCriteria          SEQUENCE {
            intraFreqMeasQuantity               IntraFreqMeasQuantity
        },
        interFreqReportingCriteria          SEQUENCE {
            filterCoefficient                   FilterCoefficient           DEFAULT
fc0,
            modeSpecificInfo                    CHOICE {
                fdd                                 SEQUENCE {
                    freqQualityEstimateQuantity-FDD     FreqQualityEstimateQuantity-
FDD
                },
                tdd                                 SEQUENCE {
```

```
                    freqQualityEstimateQuantity-TDD     FreqQualityEstimateQuantity-
TDD
                }
            }
        }
    }
}


InterRATMeasQuantity ::=                SEQUENCE {
    measQuantityUTRAN-QualityEstimate       IntraFreqMeasQuantity           OPTIONAL,
    ratSpecificInfo                     CHOICE {
        gsm                                     SEQUENCE {
            measurementQuantity                     MeasurementQuantityGSM,
            filterCoefficient                       FilterCoefficient       DEFAULT
~~fc1~~fc0,
            bsic-VerificationRequired               BSIC-VerificationRequired
        },
        is-2000                                 SEQUENCE {
            tadd-EcIo                               INTEGER (0..63),
            tcomp-EcIo                              INTEGER (0..15),
            softSlope                               INTEGER (0..63)         OPTIONAL,
            addIntercept                            INTEGER (0..63)         OPTIONAL
        }
    }
}


IntraFreqMeasQuantity ::=           SEQUENCE {
    filterCoefficient                   FilterCoefficient                   DEFAULT
~~fc1~~fc0,
    modeSpecificInfo                    CHOICE {
        fdd                             SEQUENCE {
            intraFreqMeasQuantity-FDD       IntraFreqMeasQuantity-FDD
        },
        tdd                             SEQUENCE {
            intraFreqMeasQuantity-TDDList   IntraFreqMeasQuantity-TDDList
        }
    }
}

MeasurementControlSysInfo ::=       SEQUENCE {
    use-of-HCS                          CHOICE  {
        hcs-not-used                    SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
RSCP    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
RSCP    OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
ECN0        OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
ECN0    OPTIONAL
                }
            },
            interRATMeasurementSysInfo      InterRATMeasurementSysInfo-HCS
    OPTIONAL
        },
        hcs-used                        SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
HCS-RSCP            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
HCS-RSCP            OPTIONAL
                },
                cpich-Ec-No             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-
HCS-ECN0            OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-
HCS-ECN0            OPTIONAL                }
            },
```

```
            interRATMeasurementSysInfo      InterRATMeasurementSysInfo      OPTIONAL
        }
    },

    trafficVolumeMeasSysInfo            TrafficVolumeMeasSysInfo            OPTIONAL,
    ue-InternalMeasurementSysInfo       UE-InternalMeasurementSysInfo       OPTIONAL
}


UE-InternalMeasQuantity ::=         SEQUENCE {
    measurementQuantity                 UE-MeasurementQuantity,
    filterCoefficient                   FilterCoefficient                   DEFAULT
~~fc1~~fc0}
```

13.4.x TRIGGERED_1A_EVENTS

This variable contains information about 1a events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	
>sent reports	MP		Integer(1..Infinity)	Number of reports sent to UTRAN in case of event triggered periodical reporting

13.4.x TRIGGERED_1B_EVENTS

This variable contains information about 1b events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

13.4.x TRIGGERED_1C_EVENTS

This variable contains information about 1b events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	
>sent reports	MP		Integer(1..Infinity)	Number of reports sent to UTRAN in case of event triggered periodical reporting

13.4.x BEST_CELL_1D_EVENT

This variable contains information about 1d events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Best cell	MP		Primary CPICH info 10.3.6.60	

13.4.x TRIGGERED_1E_EVENTS

This variable contains information about 1e events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

13.4.x TRIGGERED_1F_EVENTS

This variable contains information about 1f events that have been triggered in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMeas>		
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

14 Specific functions

14.1 Intra-frequency measurements

14.1.1 Intra-frequency measurement quantities

1 Downlink E_c/I_0 (chip energy per total received channel power density).

2 Downlink path loss.

3 Downlink received signal code power (RSCP) after despreading.

4 ISCP measured on Timeslot basis.

14.1.2 Intra-frequency reporting events for FDD

Within the measurement reporting criteria field in the Measurement Control message the UTRAN notifies the UE which events should trigger a measurement report. The listed events are the toolbox from which the UTRAN can choose the reporting events that are needed for the implemented handover evaluation function, or other radio network functions.
All the illustrated events are measured with respect to any of the measurement quantities given in subclause 14.1.1. The measurement objects are the monitored primary common pilot channels (CPICH). ~~The reporting events are marked with vertical arrows in the figures below.~~

NOTE: The events below are numbered 1A, 1B, 1C,… since all intra-frequency reporting events would be labelled 1X, inter-frequency reporting events would be labelled 2X, and so on for the other measurement types.

14.1.2.1 Reporting event 1A: A Primary CPICH enters the reporting range

When event 1A is configured in the UE~~ordered by UTRAN in a measurement control message~~, the UE shall ~~send a measurement report when a primary CPICH enters the reporting range as defined by the following formula~~:
If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if that primary CPICH is part of cells allowed to trigger the event according to "Triggering condition 2", and if that primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1A_EVENTS:

  - include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1A_EVENTS;

  - if the value of "Reporting deactivations threshold" for this event is greater than the current number of cells in the active set or equal to 0:

    - if "Reporting interval" for this event is not equal to 0:

      - start a timer for that primary CPICH with the value of "Reporting interval" for this event.

    - set "sent reports" for that primary CPICH in the variable TRIGGERED_1A_EVENTS;

    - send a measurement report with IEs set as below:

      In "intra-frequency event results; "Intrafrequency event identity" to "1a" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1a event that is triggered without a report being sent.

      "measured results" and possible "additional measured results" according to 8.4.2.

- if that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1A_EVENTS, and not included in the current active set:

  - if "Reporting interval" for this event is not equal to 0, and if "Reporting interval is larger than "sent reports" stored for that primary CPICH, in "cells triggered" in the variable TRIGGERED_1A_EVENTS;

  and if the timer for that primary CPICH in the variable TRIGGERED_1A_EVENTS has expired:

    - increment the stored counter "sent reports" for that CPICH in "cell triggered" in variable TRIGGERED_1A_EVENTS;

    - start a timer for that primary CPICH with the value of "Reporting interval" for this event;

    - send a measurement report with IEs set as below:

      In "intra-frequency event results; "Intrafrequency event identity" to "1a" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1a event that is triggered without a report being sent.

      "measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1A_EVENTS:

  - Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1A_EVENTS;

  - stop reporting interval timers related to that primary CPICH.

Upon transition to CELL_DCH the UE shall:

- Include the primary CPICH of all cells in the current active set into the "cells triggered" in the variable TRIGGERED_1A_EVENTS.

Equation 1 (Triggering condition ~~F~~for pathloss)~~:~~

$$10 \cdot LogM_{New} \le W \cdot 10 \cdot Log\left(1/\sum_{i=1}^{N_A}(1/M_i)\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R_{1a} - H_{1a}/2),$$ Hans: the formula has changed

Equation 2 (Triggering condition ~~F~~for all the other measurement quantities~~):~~

$$10 \cdot LogM_{New} \ge W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R_{1a} - H_{1a}/2),$$ Hans: the formula has changed

Equation 3 (Leaving triggering condition for pathloss)

$$10 \cdot LogM_{New} \ge W \cdot 10 \cdot Log\left(1/\sum_{i=1}^{N_A}(1/M_i)\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R_{1a} + H_{1a}/2),$$ Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$$10 \cdot LogM_{New} \le W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R_{1a} + H_{1a}/2),$$ Hans: the formula is new

The variables in the formula are defined as follows:

$\boldsymbol{M_{New}}$ is the measurement result of the cell entering the reporting range.

$\boldsymbol{M_i}$ is a measurement result of a cell in the active set.

$\boldsymbol{N_A}$ is the number of cells in the current active set.

~~$\boldsymbol{M_{Best}}$ is the measurement result of the strongest cell in the active set.~~

For pathloss

$\boldsymbol{M_{Best}}$ is the measurement result of the cell in the active set with the lowest measurement result.

for other measurements quantities.

$\boldsymbol{M_{Best}}$ is the measurement result of the cell in the active set with the highest measurement result.

$\boldsymbol{W}$ is a parameter sent from UTRAN to UE.

$\boldsymbol{R_{1a}}$ is the reporting range constant

$\boldsymbol{H_{1a}}$ is the hysteresis parameter for the event 1a.

If the measurement results are pathloss or CPICH-Ec/No then $\boldsymbol{M_{New}}$, $\boldsymbol{M_i}$ and $\boldsymbol{M_{Best}}$ are expressed as ratios.

If the measurement result is CPICH-RSCP then $\boldsymbol{M_{New}}$, $\boldsymbol{M_i}$ and $\boldsymbol{M_{Best}}$ are expressed in [mW].

The addition window of cells in event 1A is configured with the **reporting range constant** parameter ($\boldsymbol{R_{1a}}$) ~~common to many reporting events and an optional~~ with an additional **hysteresis** parameter ($\boldsymbol{H_{1a}}$)~~., which can be used to distinguish the addition window from reporting windows related to other measurement events.~~

The occurrence of event 1A is conditional on a **report deactivation threshold** parameter. ~~This parameter indicates the maximum number of cells allowed in the active set for measurement reports to be triggered by event 1A to be transmitted.~~

Event 1A may be enhanced with an addition timer, which is configured with the **time-to-trigger** parameter (see subclause 14.1.5.2). If a time-to-trigger value is used, a cell must continuously stay within the reporting range for the given time period, before the UE shall send a measurement report.

Event 1A may be used for triggering a measurement report, which includes cells, which the UE has detected without having received a neighbour cell list.

If more than one cell triggers event 1A within the UE internal event evaluation period (defined in [19]) and fulfils the reporting criteria after the addition timer has elapsed , the UE shall report all of the triggering cells in the event results. The triggering cells shall be sorted in descending order according to the measured quantity.

14.1.2.2 Reporting event 1B: A primary CPICH leaves the reporting range

When ~~this~~ event 1B is configured in the UE~~ordered by UTRAN in a measurement control message~~, the UE shall ~~send a measurement report when a primary CPICH leaves the reporting range as defined by the following formula~~:

If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if that primary CPICH is part of cells allowed to trigger the event according to "Triggering condition 1", and if that primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1B_EVENTS:

  - include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1B_EVENTS;

  - send a measurement report with IEs set as below:

    In "intra-frequency event results; "Intrafrequency event identity" to "1b" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1b event that is triggered without a report being sent.

    "measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1B_EVENTS:

  - Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1B_EVENTS;

Equation 1 (Triggering condition ~~F~~for pathloss)~~:~~

$$10 \cdot LogM_{Old} \geq W \cdot 10 \cdot Log\left(1/\sum_{i=1}^{N_A}(1/M_i)\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R + H_{1b}/2),$$ Hans: the formula has changed

Equation 2 (Triggering condition ~~F~~for all the other measurement quantities)~~:~~

$$10 \cdot LogM_{Old} \leq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R + H_{1b}/2),$$ Hans: the formula has changed

Equation 3 (Leaving triggering condition for pathloss)

$$10 \cdot LogM_{Old} \leq W \cdot 10 \cdot Log\left(1/\sum_{i=1}^{N_A}(1/M_i)\right) + (1-W) \cdot 10 \cdot LogM_{Best} + (R - H_{1b}/2),$$ Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$$10 \cdot LogM_{Old} \geq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R - H_{1b}/2),$$ Hans: the formula is new

The variables in the formula are defined as follows:

$\boldsymbol{M_{Old}}$ is the measurement result of the cell leaving the reporting range.

$\boldsymbol{M_i}$ is a measurement result of a cell in the active set.

$\boldsymbol{N_A}$ is the number of cells in the current active set.

~~$\boldsymbol{M_{Best}}$ is the measurement result of the strongest cell in the active set.~~

For pathloss

$\boldsymbol{M_{Best}}$ is the measurement result of the cell in the active set with the lowest measurement result.

for other measurement quantities

M_{Best} is the measurement result of the cell in the active set with the highest measurement result.

W is a parameter sent from UTRAN to UE.

R_{1b} is the reporting range constant

H_{1b} is the hysteresis parameter for the event 1b.

If the measurement results are pathloss or CPICH-Ec/No then M_{New}, M_i and M_{Best} are expressed as ratios.

If the measurement result is CPICH-RSCP then M_{New}, M_i and M_{Best} are expressed in [mW].

The drop window of cells in event 1B is configured with the **reporting range constant** parameter (R_{1b}) ~~common to many reporting events and an optional~~ with an additional **hysteresis** parameter (H_{1b})~~, which can be used to distinguish the drop window from reporting windows related to other measurement events.~~

Event 1B may be enhanced with a drop timer, which is configured with the **time-to-trigger** parameter. If the timer is used, the weakening cell must continuously stay below the reporting range for the given time period before the UE may send a measurement report.

If more than one cell triggers event 1B within the UE internal event evaluation period (defined in [19]) and fulfils the reporting criteria after the drop timer has elapsed, the UE shall report all of the triggering cells in the event results. The triggering cells shall be sorted in descending order according to the measured quantity.

14.1.2.3 Reporting event 1C: A non-active primary CPICH becomes better than an active primary CPICH

When event 1C is configured in the UE, the UE shall:

If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if the primary CPICH that is better is not included in the active set but the other primary CPICH is any of the primary CPICHs included in the active set, and if that primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1C_EVENTS:

  - include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1C_EVENTS;

  - if the value of "Replacement activation threshold" for this event is lower than the current number of cells in the active set or equal to 0:

    - if "Reporting interval" for this event is not equal to 0:

      - start a timer for that primary CPICH with the value of "Reporting interval" for this event.

    - set "sent reports" for that primary CPICH in the variable TRIGGERED_1C_EVENTS;

    - send a measurement report with IEs set as below:

      In "intra-frequency event results; "Intrafrequency event identity" to "1c" and the first entry in "cell measurement event results" to the CPICH info of the primary CPICH not in the active set that triggered the report. Further set the second entry in "cell measurement event results" to the CPICH info of the primary CPICH in the active set that now is worse than the new primary CPICH and has the best measured value (lowest measured result for pathloss and highest measured result for other measurements). Continue to set the rest of the entries to other primary CPICHs that is now worse than this new primary CPICH in the order of their measured value.

      "measured results" and possible "additional measured results" according to 8.4.2.

- if that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1C_EVENTS, and not included in the current active set:

  - if "Reporting interval" for this event is not equal to 0, and if "Reporting interval is larger than "sent reports" stored for that primary CPICH, in "cells triggered" in the variable TRIGGERED_1C_EVENTS;

    and if the timer for that primary CPICH in the variable TRIGGERED_1C_EVENTS has expired:

    - increment the stored counter "sent reports" for that CPICH in "cell triggered" in variable TRIGGERED_1C_EVENTS;

    - start a timer for that primary CPICH with the value of "Reporting interval" for this event;

    - send a measurement report with IEs set as below:

      In "intra-frequency event results; "Intrafrequency event identity" to "1c" and the first entry in "cell measurement event results" to the CPICH info of the primary CPICH not in the active set that triggered the report. Further set the second entry in "cell measurement event results" to the CPICH info of the primary CPICH in the active set that now is worse than the new primary CPICH and has the best measured value (lowest measured result for pathloss and highest measured result for other measurements). Continue to set the rest of the entries to other primary CPICHs that is now worse than this new primary CPICH in the order of their measured value.

      "measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1C_EVENTS:

  - Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1C_EVENTS;

  - stop reporting interval timers related to that primary CPICH.

Equation 1 (Triggering condition for pathloss)

$$M_{New} \leq M_{InAS} - H_{1c}/2$$ Hans: the formula is new

Equation 2 (Triggering condition for all the other measurement quantities)

$$M_{New} \geq M_{InAS} + H_{1c}/2$$ Hans: the formula is new

Equation 3 (Leaving triggering condition for pathloss)

$$M_{New} \geq M_{InAS} + H_{1c}/2$$ Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$$M_{New} \leq M_{InAS} - H_{1c}/2$$ Hans: the formula is new

The variables in the formula are defined as follows:

M_{New} is the measurement result of the cell not included in the active set.

M_{InAS} is the measurement result of a cell in the active set.

H_{1c} is the hysteresis parameter for the event 1a.

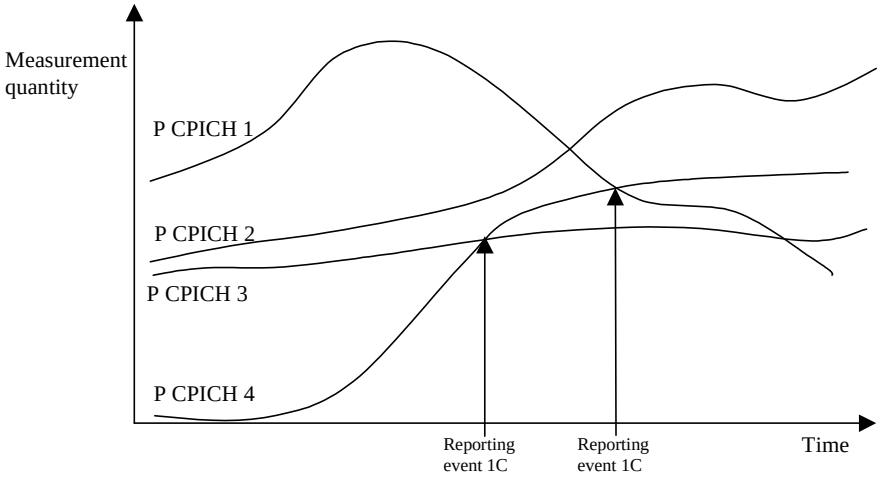

Figure 63: A primary CPICH that is not included in the active set becomes better than a primary CPICH that is in the active set

In this example the cells belonging to primary CPICH 1, 2 and 3 are supposed to be in the active set, but the cell transmitting primary CPICH 4 is not (yet) in the active set.
If a primary CPICH that is not included in the active set becomes better than a primary CPICH that is in the active set, and event 1C has been ordered by UTRAN, this event shall trigger a report to be sent from the UE.
This event may be used for replacing cells in the active set. It is activated if the number of active cells is equal to or greater than a **replacement activation threshold** parameter that UTRAN signals to the UE in the MEASUREMENT CONTROL message. This parameter indicates the minimum number of cells required in the active set for measurement reports triggered by event 1C to be transmitted.

14.1.2.4 Reporting event 1D: Change of best cell

When event 1D is configured in the UE, the UE shall:
If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH that is not stored in "Best cell" in variable BEST_CELL_1D_EVENT, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH that is not stored in "Best cell" in variable BEST_CELL_1D_EVENT, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger":

  set "best cell" in the variable BEST_CELL_1D_EVENT to that primary CPICH that triggered the event;

- send a measurement report with IEs set as below:

  In "intra-frequency event results; "Intrafrequency event identity" to "1d" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report.

  "measured results" and possible "additional measured results" according to 8.4.2.

Upon transition to CELL_DCH the UE shall:

- set "best cell" in the variable BEST_CELL_1D_EVENT to the best cell of the primary CPICHs included in the active set.

Equation 1 (Triggering condition for pathloss)

$M_{NotBest} \leq M_{Best} - H_{1d}/2$, Hans: the formula is new

Equation 2 (Triggering condition for all the other measurement quantities)

$M_{NotBest} \geq M_{Best} + H_{1d}/2$, Hans: the formula is new

The variables in the formula are defined as follows:

$M_{NotBest}$ is the measurement result of a cell not stored in "best cell" in the variable BEST_CELL_1D_EVENT.

M_{Best} is the measurement result of the cell stored in "best cell" in variable BEST_CELL_1D_EVENT.

H_{1d} is the hysteresis parameter for the event 1d.

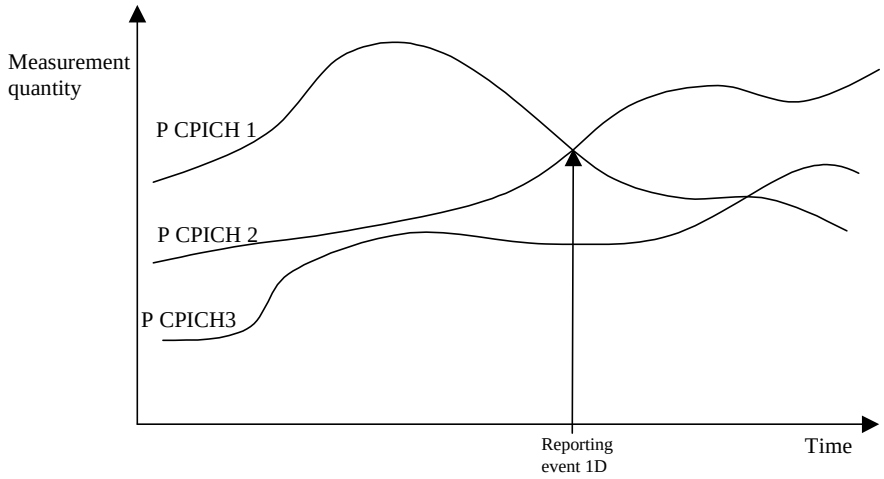

Figure 64: A primary CPICH becomes better than the previously best primary CPICH

~~If any of the primary CPICHs within the reporting range becomes better than the previously best primary CPICH, and event 1D has been ordered by UTRAN then this event shall trigger a report to be sent from the UE. The corresponding report contains (at least) the new best primary CPICH.~~

14.1.2.5 Reporting event 1E: A Primary CPICH becomes better than an absolute threshold

When event 1E is configured in the UE, the UE shall:
If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if that primary CPICH is part of cells allowed to trigger the event according to "Triggering condition 2", and that primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1E_EVENTS:

  include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1E_EVENTS;

- send a measurement report with IEs set as below:

  In "intra-frequency event results; "Intrafrequency event identity" to "1e" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1e event that is triggered without a report being sent.

  "measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1E_EVENTS:

  - Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1E_EVENTS;

Upon transition to CELL_DCH the UE shall:

- Include the primary CPICH of all cells in the current active set that fulfil the equations 1 or 2 according to the "Measurement quantity" of event 1e into the "cells triggered" in the variable TRIGGERED_1E_EVENTS.

Equation 1 (Triggering condition for pathloss)

$M_{New} \leq T_{1e} - H_{1e}/2$, Hans: the formula is new

Equation 2 (Triggering condition for all the other measurement quantities)

$M_{New} \geq T_{1e} + H_{1e}/2$, Hans: the formula is new

Equation 3 (Leaving triggering condition for pathloss)

$M_{New} \geq T_{1e} + H_{1e}/2$, Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$M_{New} \leq T_{1e} - H_{1e}/2$, Hans: the formula is new

The variables in the formula are defined as follows:

M_{New} is the measurement result of a cell that becomes better than an absolute threshold

T_{1e} is an absolute threshold

H_{1e} is the hysteresis parameter for the event 1e.

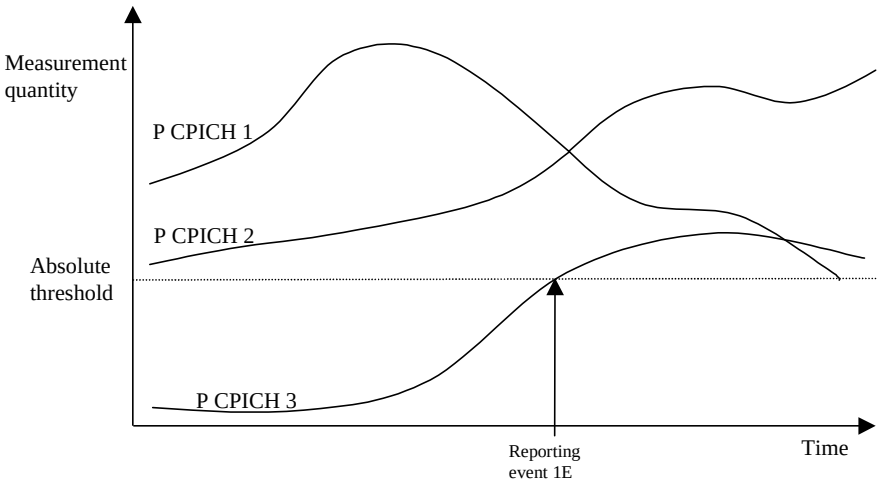

Figure 65: Event-triggered report when a Primary CPICH becomes better than an absolute threshold

~~When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the Measurement quantity of a Primary CPICH becomes better than an absolute threshold. The corresponding report contains (at least) the involved Primary CPICH.~~

Event 1E may be used for triggering a measurement report, which includes cells, which the UE has detected without having received a neighbour cell list.

14.1.2.6 Reporting event 1F: A Primary CPICH becomes worse than an absolute threshold

When event 1F is configured in the UE, the UE shall:

If "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH, the UE shall:

- if the equations have been fulfilled during the time "Time to trigger", and if that primary CPICH is part of cells allowed to trigger the event according to "Triggering condition 1", and that

primary CPICH is not included in the "cells triggered" in the variable TRIGGERED_1F_EVENTS:

include that primary CPICH in the "cells triggered" in the variable TRIGGERED_1F_EVENTS;

- send a measurement report with IEs set as below:

In "intra-frequency event results; "Intrafrequency event identity" to "1f" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report. Include this for each 1f event that is triggered without a report being sent.

"measured results" and possible "additional measured results" according to 8.4.2.

If "Measurement quantity" is "pathloss" and Equation 3 below is fulfilled for a primary CPICH, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 4 below is fulfilled for a primary CPICH, the UE shall:

- If that primary CPICH is included in the "cells triggered" in the variable TRIGGERED_1F_EVENTS:

- Remove that primary CPICH and sent reports from "cells triggered" in the variable TRIGGERD_1F_EVENTS;

Upon transition to CELL_DCH the UE shall:

- Include the primary CPICH of all cells that fulfil the equations 1 or 2 according to the "Measurement quantity" of event 1f into the "cells triggered" in the variable TRIGGERED_1F_EVENTS.

Equation 1 (Triggering condition for pathloss)

$M_{New} \geq T_{1f} + H_{1f}/2$, Hans: the formula is new

Equation 2 (Triggering condition for all the other measurement quantities)

$M_{New} \leq T_{1f} - H_{1f}/2$, Hans: the formula is new

Equation 3 (Leaving triggering condition for pathloss)

$M_{New} \leq T_{1f} - H_{1f}/2$, Hans: the formula is new

Equation 4 (Leaving triggering condition for all the other measurement quantities)

$M_{New} \geq T_{1f} + H_{1f}/2$, Hans: the formula is new

The variables in the formula are defined as follows:

M_{New} is the measurement result of a cell that becomes worse than an absolute threshold

T_{1f} is an absolute threshold

H_{1f} is the hysteresis parameter for the event 1f.

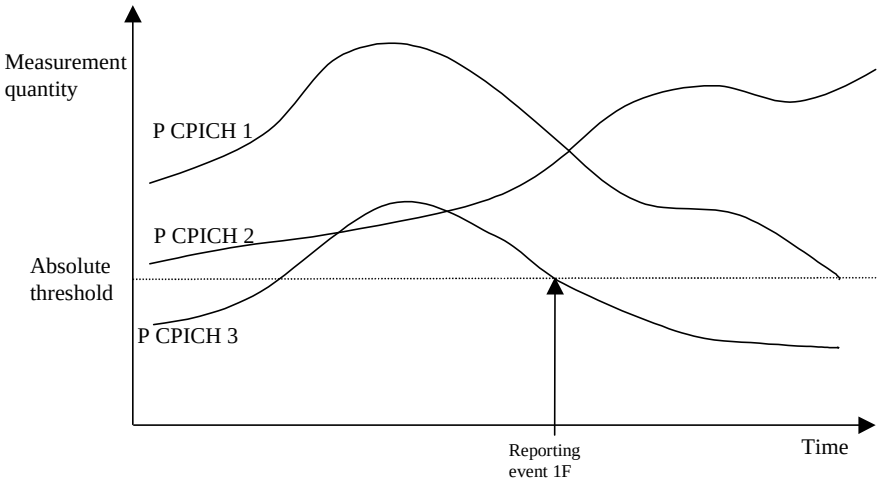

Figure 66: Event-triggered report when a Primary CPICH becomes worse than an absolute threshold

~~When this event is ordered by the UTRAN in a measurement control message the UE shall send a report when a primary CPICH becomes worse than an absolute threshold. The corresponding report contains (at least) the involved Primary CPICH.~~

14.2 Inter-frequency measurements

The frequency quality estimate used in events 2a, 2b 2c, 2d and 2e is defined as:

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = W_j \cdot 10 \cdot Log\left(\sum_{i=1}^{N_{A\,j}} M_{i\,j}\right) + (1 - W_j) \cdot 10 \cdot LogM_{Best\ j} - H,$$

The variables in the formula are defined as follows:

$\boldsymbol{Q_{frequency\ j}}$ is the estimated quality of the active set on frequency j

$M_{frequency\ j}$ is the estimated quality of the active set on frequency j.

$M_{i\,j}$ is a measurement result of cell i in the active set on frequency j.

$N_{A\,j}$ is the number of cells in the active set on frequency j.

$M_{Best\,j}$ is the measurement result of the ~~strongest~~ cell in the active set on frequency j with the highest measurement result.

W_j is a parameter sent from UTRAN to UE and used for frequency j

H is the hysteresis parameter

If the measurement result is CPICH-Ec/No then $\boldsymbol{M_{New}}$, $\boldsymbol{M_{i\,j}}$ and $\boldsymbol{M_{Best}}$ are expressed as ratios.

If the measurement result is CPICH-RSCP or PCCPCH-RSCP then $\boldsymbol{M_{New}}$, $\boldsymbol{M_{i\,j}}$ and $\boldsymbol{M_{Best}}$ are expressed in [mW].

14.3 Inter-RAT measurements

The estimated quality of the active set in UTRAN in events 3a is defined as:

$$Q_{UTRAN} = 10 \cdot LogM_{UTRAN} = W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best},$$

The variables in the formula are defined as follows:

$\boldsymbol{Q_{UTRAN}}$ is the estimated quality of the active set on the currently used UTRAN frequency

M_{UTRAN} is the estimated quality of the active set on currently used UTRAN frequency expressed in another unit.

M_i is a measurement result of cell i in the active set.

N_A is the number of cells in the active set.

M_{Best} is the measurement result of the ~~strongest~~ cell in the active set with the highest measurement result.

W is a parameter sent from UTRAN to UE.

$\boldsymbol{M_{UTRAN}}$, $\boldsymbol{M_i}$ and $\boldsymbol{M_{Best}}$ are expressed in [mW].

14.3.1.2 Event 3b: The estimated quality of other system is below a certain threshold

When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the estimated quality of the other system is below the value of the IE " Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system ~~and the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency~~.

14.3.1.3 Event 3c: The estimated quality of other system is above a certain threshold

When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the estimated quality of the other system is above the value of the IE " Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system ~~and the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency~~.

14.4 Traffic Volume Measurements

14.4.1 Traffic Volume Measurement Quantity

For traffic volume measurements in the UE only one quantity is compared with the thresholds. This quantity is Transport Channel Traffic Volume [15] (which equals the sum of Buffer Occupancies of RBs multiplexed onto a transport channel) in number of bytes. In order to support a large variation of bit rates and RLC buffer size capabilities, a non-linear scale is used. Since, for each RB, the expected traffic includes both new and retransmitted RLC PDUs and potentially existing Control PDUs, all these should be included in the Buffer Occupancy measure. It should also be noted that traffic volume measurements are only applicable for acknowledged and unacknowledged mode.
According to what is stated in the Measurement Control message, the UE should support measuring of RLC Buffer Payload, Average of RLC Buffer Payload, and Variance of RLC Buffer Payload for a specific RB, RBs multiplexed onto the same Transport channel and the total UE traffic volume (the same as one transport channel for a UE that uses RACH). When the RLC buffer payload, Average of RLC buffer payload or Variance of RLC buffer payload is reported, the measured quantity shall be rounded upwards to the closest higher value possible to report.

3GPP TSG-RAN WG2 Meeting #21
Pusan, Korea, 21-25 May 2001

Tdoc R2-011071

CR-Form-v3

CHANGE REQUEST

⌘ **25.331 CR 763** ⌘ rev **-** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	RLC Tr discard
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-05-15
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	The configuration for handling of erroneous SDUs in Tr mode is not reflected in RRC.
Summary of change:	⌘	The configuration for delivery of erroneous SDUs is clarified. Depending of configuration from upper layer (see 24.008), lower layers (RLC) is configured correspondingly. Corresponding CRs are provided on 25.322 and 25.321 **Backwards compatibility:** The CR is a clarification made to avoid erroneous implementation. It does not include any change or added functionality, and could therefore bee seen as backwards compatible.
Consequences if not approved:	⌘	Unclear behaviour. Configuration made in 24.008 is not reflected in RRC. Risk for erroneous implementation regarding handling of e.g. speech frames.

Clauses affected:	⌘	8.6.4.3, 8.6.4.5		
Other specs affected:	⌘	**X** Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.322, 25.321
Other comments:	⌘			

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

~~5)~~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.

8.6.4.3 RB information to setup

If the IE "RB information to setup" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity". The UE shall:

- perform the actions for the IE "PDCP info", if present, according to subclause 8.6.4.10, applied for the radio bearer;
- perform the actions for the IE "RLC info", according to subclause 8.6.4.9, applied for the radio bearer;
- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer;
- if the IE "Downlink RLC mode" in the IE "RLC info" is set to "TM RLC":
  - configure delivery of erroneous SDUs in lower layers according to indication from upper layer [5].
- if the variable CIPHERING_STATUS is set to "Started"; and
  - if the IE "Uplink RLC mode" or the IE "Downlink RLC mode" in the IE "RLC info" is set to "AM RLC" or "UM RLC":
    - calculate the START value according to subclause 8.5.9;
    - store the calculated START value in the variable START_VALUE_TO_TRANSMIT;
    - initialise ciphering on the radio bearer using the calculated START value;
  - start to perform ciphering on the radio bearer in lower layers, using the value of the IE "RB identity" minus one as the value of BEARER in the ciphering algorithm.

8.6.4.4 RB information to be affected

If the IE "RB information to be affected" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity". The UE shall:

- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer.

8.6.4.5 RB information to reconfigure

If the IE "RB information to reconfigure" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity". The UE shall:

- perform the actions for the IE "PDCP info", if present, according to subclause 8.6.4.10, applied for the radio bearer;
- perform the actions for the IE "RLC info", according to subclause 8.6.4.9, applied for the radio bearer;
- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer;
- if the IE "Downlink RLC mode" in the IE "RLC info" is set to "TM RLC":
  - configure delivery of erroneous SDUs in lower layers according to indication from upper layer [5].
- if the IE "PDCP SN info" is included:
  - perform the actions as specified in 8.6.4.11 applied for the radio bearer;
- if the IE "RB stop/continue" is included; and
  - if the "RB identity" has a value greater than 2; and
    - if the value of the IE "RB stop/continue" is "stop":
      - configure the RLC entity for the radio bearer to stop;
      - set the IE "RB started" in the variable ESTABLISHED_RABS to "stopped" for that radio bearer;

- if the value of the IE "RB stop/continue" is "continue":
  - configure the RLC entity for the radio bearer to continue;
  - set the IE "RB started" in the variable ESTABLISHED_RABS to "started" for that radio bearer;
- if the IE "RB identity" is set to a value less than 2:
  - set the variable INVALID_CONFIGURATION to TRUE.

3GPP TSG-RAN WG2 Meeting #21
Pusan, Korea, 21-25 May 2001

Tdoc R2-011356

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **764** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	RLC Tr discard
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-05-25
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential 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:
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R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	The configuration for handling of erroneous SDUs in Tr mode is not reflected in RRC.
Summary of change:	⌘	The configuration for delivery of erroneous SDUs is clarified. Depending of configuration from upper layer (see 24.008), lower layers (RLC) is configured correspondingly. Corresponding CRs are provided on 25.322 and 25.321
Consequences if not approved:	⌘	Unclear behaviour. Configuration made in 24.008 is not reflected in RRC. Risk for erroneous implementation regarding handling of e.g. speech frames.

Clauses affected:	⌘			
Other specs affected:	⌘	**X** Other core specifications	⌘	25.322, 25.321
		☐ Test specifications		
		☐ O&M Specifications		
Other comments:	⌘			

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downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

~~5)~~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.

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- perform the actions for the IE "RLC info", according to subclause 8.6.4.9, applied for the radio bearer;
- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer;
- if the IE "Downlink RLC mode" in the IE "RLC info" is set to "TM RLC":
  - configure delivery of erroneous SDUs in lower layers according to indication from upper layer [5].
- if the variable CIPHERING_STATUS is set to "Started"; and
  - if the IE "Uplink RLC mode" or the IE "Downlink RLC mode" in the IE "RLC info" is set to "AM RLC" or "UM RLC":
    - calculate the START value according to subclause 8.5.9;
    - store the calculated START value in the variable START_VALUE_TO_TRANSMIT;
    - initialise ciphering on the radio bearer using the calculated START value;
  - start to perform ciphering on the radio bearer in lower layers, using the value of the IE "RB identity" minus one as the value of BEARER in the ciphering algorithm.

8.6.4.4 RB information to be affected

If the IE "RB information to be affected" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity". The UE shall:

- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer.

8.6.4.5 RB information to reconfigure

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- perform the actions for the IE "RLC info", according to subclause 8.6.4.9, applied for the radio bearer;
- perform the actions for the IE "RB mapping info", according to subclause 8.6.4.8, applied for the radio bearer;
- if the IE "Downlink RLC mode" in the IE "RLC info" is set to "TM RLC":
  - configure delivery of erroneous SDUs in lower layers according to indication from upper layer [5].
- if the IE "PDCP SN info" is included:
  - perform the actions as specified in 8.6.4.11 applied for the radio bearer;
- if the IE "RB stop/continue" is included; and
  - if the "RB identity" has a value greater than 2; and
    - if the value of the IE "RB stop/continue" is "stop":
      - configure the RLC entity for the radio bearer to stop;
      - set the IE "RB started" in the variable ESTABLISHED_RABS to "stopped" for that radio bearer;

- if the value of the IE "RB stop/continue" is "continue":
  - configure the RLC entity for the radio bearer to continue;
  - set the IE "RB started" in the variable ESTABLISHED_RABS to "started" for that radio bearer;
- if the IE "RB identity" is set to a value less than 2:
  - set the variable INVALID_CONFIGURATION to TRUE.

3GPP TSG RAN2 Meeting #21
Pusan, Korea, May 21-25, 2001

R2-011252

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **765** ⌘ ev **r1** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Annex B CPCH Correction
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	21 May 2001
Category:	⌘	**F**
Release:	⌘	R99

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)

Reason for change:	⌘	The current text is incorrect and inconsistent with concepts for RRC control of radio resources. UE uses only assigned resources. Traffic volume is only UE measurement used for control of uplink CPCH.
Summary of change:	⌘	Informative text describing UE access to CPCH and UE measurements supporting CPCH are corrected.
Consequences if not approved:	⌘	Current text may lead to misunderstanding of the specification.

Clauses affected:	⌘	B.3.2.5
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

B.3.2.5 Radio Resource Allocation Tasks (CELL_FACH)

In the CELL_ FACH state the UE will monitor an FACH. It is enabled to transmit uplink control signals and it may be able to transmit small data packets on the RACH.

The network can assign the UE transport channel parameters (e.g. transport format sets) in advance, to be used when a DCH is used. Upon assignment of the physical channel for DCH, the UE moves to CELL_DCH state and uses the pre-assigned TFS for the DCH.

If no UE dedicated physical channel or transport channel configuration has been assigned, the UE uses the common physical channel and transport channel configuration according to the system information.

For the uplink data transmission, the UE reports the observed traffic volume to the network in order for the network to re-evaluate the current allocation of resources. This report contains e.g. the amount of data to be transmitted or the buffer status in the UE.

When there is either user or control data to transmit, a selection procedure determines whether the data should be transmitted on a common transport channel, or if a transition to CELL_DCH should be executed. The selection is dynamic and depends on e.g. traffic parameters (amount of data, packet burst frequency).

In FDD mode, the UTRAN can assign CPCH resources to the UE in CELL_FACH state. When CPCH resources are assigned, the UE will continue to monitor FACHs. When CPCH resources are assigned, the UE will use CPCH for all uplink traffic in accordance with RB mapping. ~~The UE may use the RACH to transmit uplink control signals and small data packets. The UE also may choose to transmit data packets, larger than those carried on the RACH, on the CPCH channel. The UE selects either the RACH or one of the CPCH channels to make maximum use of the capacity available on that channel.~~

In FDD mode, ~~the UE provides the~~ UTRAN may configure the UE to provide~~with~~ CPCH measurement reports of ~~data, which includes data, queue depth (current size of data buffers), average access time for each CPCH channel used, and average~~ traffic volume on each CPCH channel used. With these measures, the UTRAN can reallocate network resources on a periodic basis. The UTRAN allocates CPCH Sets to each cell and assigns UEs to one of the cell's CPCH Sets. The UEs can dynamically access the CPCH resources without further UTRAN control.

In the TDD mode, the UTRAN can assign USCH / DSCH resources to the UE in CELL_FACH state. When USCH / DSCH resources are assigned, the UE will continue to monitor FACHs, depending on the UE capability. The UE may use the USCH / DSCH to transmit signalling messages or user data in the uplink and / or the downlink using USCH and / or DSCH when resources are allocated to cell and UE is assigned use of those USCH / DSCH.

For the uplink data transmission on USCH the UE reports to the network the traffic volume (current size of RLC data buffers), The UTRAN can use these measurement reports to re-evaluate the current allocation of the USCH / DSCH resources.

3GPP TSG RAN2 Meeting #21
Pusan, Korea, May 21-25, 2001

R2-011253

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **766** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Annex B CPCH Correction
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	21 May 2001
Category:	⌘	**A**
Release:	⌘	REL-4

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)*
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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)

Reason for change:	⌘	The current text is incorrect and inconsistent with concepts for RRC control of radio resources. UE uses only assigned resources. Traffic volume is only UE measurement used for control of uplink CPCH.
Summary of change:	⌘	Informative text describing UE access to CPCH and UE measurements supporting CPCH are corrected.
Consequences if not approved:	⌘	Current text may lead to misunderstanding of the specification.

Clauses affected:	⌘	B.3.2.5
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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In the CELL_ FACH state the UE will monitor an FACH. It is enabled to transmit uplink control signals and it may be able to transmit small data packets on the RACH.

The network can assign the UE transport channel parameters (e.g. transport format sets) in advance, to be used when a DCH is used. Upon assignment of the physical channel for DCH, the UE moves to CELL_DCH state and uses the pre-assigned TFS for the DCH.

If no UE dedicated physical channel or transport channel configuration has been assigned, the UE uses the common physical channel and transport channel configuration according to the system information.

For the uplink data transmission, the UE reports the observed traffic volume to the network in order for the network to re-evaluate the current allocation of resources. This report contains e.g. the amount of data to be transmitted or the buffer status in the UE.

When there is either user or control data to transmit, a selection procedure determines whether the data should be transmitted on a common transport channel, or if a transition to CELL_DCH should be executed. The selection is dynamic and depends on e.g. traffic parameters (amount of data, packet burst frequency).

In FDD mode, the UTRAN can assign CPCH resources to the UE in CELL_FACH state. When CPCH resources are assigned, the UE will continue to monitor FACHs. When CPCH resources are assigned, the UE will use CPCH for all uplink traffic in accordance with RB mapping. ~~The UE may use the RACH to transmit uplink control signals and small data packets. The UE also may choose to transmit data packets, larger than those carried on the RACH, on the CPCH channel. The UE selects either the RACH or one of the CPCH channels to make maximum use of the capacity available on that channel.~~

In FDD mode, ~~the UE provides the~~ UTRAN may configure the UE to provide~~with~~ CPCH measurement reports of ~~data, which includes data, queue depth (current size of data buffers), average access time for each CPCH channel used, and average~~ traffic volume on each CPCH channel used. With these measures, the UTRAN can reallocate network resources on a periodic basis. The UTRAN allocates CPCH Sets to each cell and assigns UEs to one of the cell's CPCH Sets. The UEs can dynamically access the CPCH resources without further UTRAN control.

In the TDD mode, the UTRAN can assign USCH / DSCH resources to the UE in CELL_FACH state. When USCH / DSCH resources are assigned, the UE will continue to monitor FACHs, depending on the UE capability. The UE may use the USCH / DSCH to transmit signalling messages or user data in the uplink and / or the downlink using USCH and / or DSCH when resources are allocated to cell and UE is assigned use of those USCH / DSCH.

For the uplink data transmission on USCH the UE reports to the network the traffic volume (current size of RLC data buffers), The UTRAN can use these measurement reports to re-evaluate the current allocation of the USCH / DSCH resources.

3GPP TSG RAN2 Meeting #21
Pusan, Korea, May 21-25, 2001

R2-011254

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **767** ⌘ ev **r1** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	SIB Correction for CSICH Power Offset
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	21 May 2001
Category:	⌘	**F**
Release:	⌘	R99

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)

Reason for change:	⌘	SIB5 and SIB6 contain configuration parameters for common channels, including RACH, but excluding CPCH. CPCH configuration parameters are defined in SIB8 and SIB9. CSICH Power Offset is a CPCH parameter which is incorrectly located in SIB 6. CSICH Power Offset should be included in SIB 8.
Summary of change:	⌘	CSICH Power Offset is moved from SIB6 to SIB8
Consequences if not approved:	⌘	SIB 6 is not required in all implementations. CSICH Power Offset is listed as an optional parameter in SIB6. If CSICH Power Offset is not relocated to SIB8, systems which use CPCH but do not require SIB6 will be required to transmit SIB6 to provide this single parameter.

Clauses affected:	⌘	10.2.48.8.9, 10.2.48.8.11, 11.3		
Other specs Affected:	⌘	☐ 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/3G_Specs/CRs.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.

10.2.48.8.9 System Information Block type 6

The system information block type 6 contains parameters for the configuration of the common and shared physical channels to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PhyCH information elements				
PICH Power offset	MP		PICH Power offset 10.3.6.50	
CHOICE *mode*	MP			
>FDD				
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	
~~>>CSICH Power offset~~	~~OP~~		~~CSICH Power offset 10.3.6.15~~	
>TDD				
>>PUSCH system information	OP		PUSCH system information 10.3.6.66	
>>PDSCH system information	OP		PDSCH system information 10.3.6.46	
>>TDD open loop power control	MP		TDD open loop power control 10.3.6.79	
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.57	Note 1
PRACH system information list	OP		PRACH system information list 10.3.6.55	
Secondary CCPCH system information	OP		Secondary CCPCH system information 10.3.6.72	
CBS DRX Level 1 information	CV CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed

10.2.48.8.11 System Information Block type 8

NOTE: Only for FDD.

The system information block type 8 contains static CPCH information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE information				
CPCH parameters	MP		CPCH parameters 10.3.3.7	
PhyCH information elements				
CPCH set info list	MP	1 to <maxCPCHsets>		
>CPCH set info	MP		CPCH set info 10.3.6.13	
CSICH Power offset	MP		CSICH Power offset 10.3.6.15	

11.3 Information element definitions

```
SysInfoType6 ::=                    SEQUENCE {
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset,

                ~~csich-PowerOffset~~dummy              CSICH-PowerOffset           OPTIONAL
This parameter dummy is not to be sent in the current version of the specification.
            },
            tdd                             SEQUENCE {
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList         OPTIONAL,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList        OPTIONAL,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType7 ::=                    SEQUENCE {
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                ul-Interference                 UL-Interference
            },
            tdd                             NULL
        },
        prach-Information-SIB5-List     DynamicPersistenceLevelList,
        prach-Information-SIB6-List     DynamicPersistenceLevelList         OPTIONAL,
        expirationTimeFactor            ExpirationTimerFactor               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType8 ::=                    SEQUENCE {
    -- User equipment IEs
        cpch-Parameters                 CPCH-Parameters,
    -- Physical channel IEs
        cpch-SetInfoList                CPCH-SetInfoList,
        csich-PowerOffset               CSICH-PowerOffset,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
```

```
}
```

3GPP TSG RAN2 Meeting #21
Pusan, Korea, May 21-25, 2001

R2-011255

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **768** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	SIB Correction for CSICH Power Offset
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	21 May 2001
Category:	⌘	**A**
Release:	⌘	REL-4

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)

Reason for change:	⌘	SIB5 and SIB6 contain configuration parameters for common channels, including RACH, but excluding CPCH. CPCH configuration parameters are defined in SIB8 and SIB9. CSICH Power Offset is a CPCH parameter which is incorrectly located in SIB 6. CSICH Power Offset should be included in SIB 8.
Summary of change:	⌘	CSICH Power Offset is moved from SIB6 to SIB8
Consequences if not approved:	⌘	SIB 6 is not required in all implementations. CSICH Power Offset is listed as an optional parameter in SIB6. If CSICH Power Offset is not relocated to SIB8, systems which use CPCH but do not require SIB6 will be required to transmit SIB6 to provide this single parameter.

Clauses affected:	⌘	10.2.48.8.9, 10.2.48.8.11, 11.3
Other specs Affected:	⌘	☐ 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/3G_Specs/CRs.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.

10.2.48.8.9 System Information Block type 6

The system information block type 6 contains parameters for the configuration of the common and shared physical channels to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PhyCH information elements				
PICH Power offset	MP		PICH Power offset 10.3.6.50	
CHOICE *mode*	MP			
>FDD				
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	
~~>>CSICH Power offset~~	~~OP~~		~~CSICH Power offset 10.3.6.15~~	
>TDD				
>>PUSCH system information	OP		PUSCH system information 10.3.6.66	
>>PDSCH system information	OP		PDSCH system information 10.3.6.46	
>>TDD open loop power control	MP		TDD open loop power control 10.3.6.79	
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.57	Note 1
PRACH system information list	OP		PRACH system information list 10.3.6.55	
Secondary CCPCH system information	OP		Secondary CCPCH system information 10.3.6.72	
CBS DRX Level 1 information	CV CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed

10.2.48.8.11 System Information Block type 8

NOTE: Only for FDD.

The system information block type 8 contains static CPCH information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE information				
CPCH parameters	MP		CPCH parameters 10.3.3.7	
PhyCH information elements				
CPCH set info list	MP	1 to <maxCPCHsets>		
>CPCH set info	MP		CPCH set info 10.3.6.13	
CSICH Power offset	MP		CSICH Power offset 10.3.6.15	

11.3 Information element definitions

```
SysInfoType6 ::=                    SEQUENCE {
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset,

                ~~csich-PowerOffset~~dummy              CSICH-PowerOffset           OPTIONAL
This parameter dummy is not to be sent in the current version of the specification.
            },
            tdd                             SEQUENCE {
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList         OPTIONAL,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList        OPTIONAL,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType7 ::=                    SEQUENCE {
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                ul-Interference                 UL-Interference
            },
            tdd                             NULL
        },
        prach-Information-SIB5-List     DynamicPersistenceLevelList,
        prach-Information-SIB6-List     DynamicPersistenceLevelList         OPTIONAL,
        expirationTimeFactor            ExpirationTimerFactor               OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType8 ::=                    SEQUENCE {
    -- User equipment IEs
        cpch-Parameters                 CPCH-Parameters,
    -- Physical channel IEs
        cpch-SetInfoList                CPCH-SetInfoList,
        csich-PowerOffset               CSICH-PowerOffset,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
```

```
}
```

3GPP TSG-RAN WG2 Meeting #20
Hayama, Japan, 9th – 13th April 2001

R2-011430

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **769** ⌘ rev **r1** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	Transfer of Last known position in case of SRNS relocation
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	10.5.2001
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential 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)*

Reason for change:	⌘	In TS 25.305 v3.5.0 (R99) it is stated that the last known position and a time stamp of the position estimate UE should be transferred during SRNS relocation if available, since this could be useful information for the target RNC e.g. for RRM. Therefore this CR adds the last known position and time stamp to the conatiner "RRC information to target RNC". SFN is proposed as the time stamp, although it is unambiguous only for 4096 frames. Since the probability of a position remaining the same decreases with elapsed time, it is assumed that SFN should be sufficient and position estimates should only be transferred if the estimate was performed within the last 4096 ms. In order to provide backwards compatibility, an extension mechanism should be used for introducing the above mentioned information. However, currently there is no extension mechanism specified for the container "RRC information to target RNC". Therefore it is proposed by this CR to add such a mechanism to this container, although the extension mechanism itself is not backward compatible to v.3.6.0 of TS 25.331. Since introduction of an extension mechanism itself is not backward compatible, last known position and time stamp are NOT included in this new extension container.
Summary of change:	⌘	- An extension mechanism is introduced for the RRC information to target RNC. - Last known position and time stamp is added to the RRC information for target RNC.
Consequences if not approved:	⌘	Misalignment between stage 2 and stage 3 UE positioning.

Clauses affected:	⌘	11, 14.12.1		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	ASN.1 will be added if this draft is agreed.		

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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.

14.12.1 RRC Information to target RNC

RRC Information to target RNC may either be sent from source RNC or from another RAT. In case of handover to UTRAN, this information originates from another RAT, while in case of SRNC relocation the RRC information originates from the source RNC. In case of SRNC information, the RRC information transferred specifies the configuration of RRC and the lower layers it controls, e.g., including the radio bearer and transport channel configuration. It is used by the target RNC to initialise RRC and the lower layer protocols to facilitate SRNC relocation in a manner transparent to the UE.

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
Non RRC IEs				
CHOICE case	MP			
>Handover to UTRAN				
>>UE radio access capability	OP		UE radio access capability 10.3.3.42	
>>UE system specific capability	OP		UE system specific capability 14.13.2.4	
>>UE security information	OP		UE security information 14.13.2.2	
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	
>SRNC relocation				
>>State of RRC	MP		Enumerated (CELL_DCH, CELL_FACH,CELL_PCH, URA_PCH)	
>>State of RRC procedure	MP		Enumerated (await no RRC message, Complete, await RB Setup Complete, await RB Reconfiguration Complete, await RB Release Complete, await Transport CH Reconfiguration Complete, await Physical CH Reconfiguration Complete, await Active Set Update Complete, await Handover Complete, send Cell Update Confirm, send URA Update Confirm, , others)	
Ciphering related information				
>>Ciphering status	MP		Enumerated(Not started, Started)	
>>Calculation time for ciphering related information	CV *Ciphering*			Time when the ciphering information of the message were calculated, relative to a cell of the target RNC
>>>Cell Identity	MP		Cell Identity 10.3.2.2	Identity of one of the cells under the target RNC and included in the active set of the current call
>>>SFN	MP		Integer(0..4095)	
>>COUNT-C list	CV *Ciphering*	1 to <maxCN domains>		COUNT-C values for radio bearers using transparent mode RLC
>>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>>COUNT-C	MP		Bitstring(32)	
>>Ciphering info per radio bearer	OP	1 to <maxRB>		For signalling radio bearers this IE is mandatory.
>>>RB identity	MP		RB identity 10.3.4.16	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>>Downlink HFN	MP		Bitstring(20..25)	This IE is either RLC AM HFN (20 bits) or RLC UM HFN (25 bits)
>>>Uplink HFN	MP		Bitstring(20..25)	This IE is either RLC AM HFN (20 bits) or RLC UM HFN (25 bits)
Integrity protection related information				
>>Integrity protection status	MP		Enumerated(Not started, Started)	
>>Signalling radio bearer specific integrity protection information	CV *IP*	4 to <maxSRBsetup>		
>>>Uplink RRC HFN	MP		Bitstring (28)	
>>>Downlink RRC HFN	MP		Bitstring (28)	
>>>Uplink RRC Message sequence number	MP		Integer (0..15)	
>>>Downlink RRC Message sequence number	MP		Integer (0..15)	
>>Implementation specific parameters	OP		Bitstring (1..512)	
RRC IEs				
UE Information elements				
>>U-RNTI	MP		U-RNTI 10.3.3.47	
>>C-RNTI	OP		C-RNTI 10.3.3.8	
>>UE radio access Capability	MP		UE radio access capability 10.3.3.42	
>>Last known UE position	OP			
>>>SFN	MP		Integer (0..4095)	Time when position was estimated
>>>Cell ID	MP		Cell identity; 10.3.2.2	Indicates the cell, the SFN is valid for.
>>>CHOICE *Position estimate*	MP			
>>>>Ellipsoid Point			Ellipsoid Point; 10.3.8.4a	
>>>>Ellipsoid point with uncertainty circle			Ellipsoid point with uncertainty circle 10.3.8.4d	
>>>>Ellipsoid point with uncertainty ellipse			Ellipsoid point with uncertainty ellipse 10.3.8.4e	
>>>>Ellipsoid point with altitude			Ellipsoid point with altitude 10.3.8.4b	
>>>>Ellipsoid point with altitude and uncertainty ellipsoid			Ellipsoid point with altitude and uncertainty ellipsoid 10.3.8.4c	
Other Information elements				
>>Inter System message (inter system classmark)	OP		Inter-RAT message 10.3.8.8	
UTRAN Mobility Information elements				
>>URA Identifier	OP		URA identity 10.3.2.6	
CN Information Elements				
>>CN common GSM-MAP NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
>>CN domain related information	OP	1 to <MaxCN		CN related information to be

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
		domains >		provided for each CN domain
>>>CN domain identity	MP			
>>>CN domain specific GSM-MAP NAS system info	MP		NAS system information (GSM-MAP) 10.3.1.9	
Measurement Related Information elements				
>>For each ongoing measurement reporting	OP	1 to <MaxNo OfMeas>		
>>>Measurement Identity	MP		Measurement identity 10.3.7.48	
>>>Measurement Command	MP		Measurement command 10.3.7.46	
>>>Measurement Type	CV Setup		Measurement type 10.3.7.50	
>>>Measurement Reporting Mode	OP		Measurement reporting mode 10.3.7.49	
>>>Additional Measurements list	OP		Additional measurements list 10.3.7.1	
>>>CHOICE Measurement	OP			
>>>>Intra-frequency				
>>>>>Intra-frequency cell info	OP		Intra-frequency cell info list 10.3.7.33	
>>>>>Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
>>>>>Intra-frequency reporting quantity	OP		Intra-frequency reporting quantity 10.3.7.41	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>>CHOICE report criteria	OP			
>>>>>>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Inter-frequency				
>>>>>Inter-frequency cell info	OP		Inter-frequency cell info list 10.3.7.13	
>>>>>Inter-frequency measurement quantity	OP		Inter-frequency measurement quantity 10.3.7.18	
>>>>>Inter-frequency reporting quantity	OP		Inter-frequency reporting quantity 10.3.7.21	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>>CHOICE report criteria	OP			
>>>>>>Inter-frequency			Inter-frequency	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
measurement reporting criteria			measurement reporting criteria 10.3.7.19	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Inter-RAT				
>>>>>Inter-RAT cell info	OP		Inter-RAT cell info list 10.3.7.23	
>>>>>Inter-RAT measurement quantity	OP		Inter-RAT measurement quantity 10.3.7.29	
>>>>>Inter-RAT reporting quantity	OP		Inter-RAT reporting quantity 10.3.7.32	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>>CHOICE report criteria	OP			
>>>>>>Inter-RAT measurement reporting criteria			Inter-RAT measurement reporting criteria 10.3.7.30	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Traffic Volume				
>>>>>Traffic volume measurement Object	OP		Traffic volume measurement object 10.3.7.70	
>>>>>Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
>>>>>Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
>>>>>CHOICE report criteria	OP			
>>>>>>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.72	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Quality				
>>>>>Quality measurement Object	OP		Quality measurement object	
>>>>>CHOICE report criteria	OP			
>>>>>>Quality measurement reporting criteria			Quality measurement reporting criteria 10.3.7.58	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>UE internal				
>>>>>UE internal measurement quantity	OP		UE internal measurement quantity 10.3.7.79	
>>>>>UE internal reporting quantity	OP		UE internal reporting quantity	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			10.3.7.82	
>>>>>CHOICE report criteria	OP			
>>>>>>UE internal measurement reporting criteria			UE internal measurement reporting criteria 10.3.7.80	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>UE positioning				
>>>>>LCS reporting quantity	OP		LCS reporting quantity 10.3.7.111	
>>>>>CHOICE report criteria	OP			
>>>>>>LCS reporting criteria			LCS reporting criteria 10.3.7.110	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting				
Radio Bearer Information Elements				
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	
>>Signalling RB information list	MP	1 to <maxSRBsetup>		For each signalling radio bearer
>>>Signalling RB information	MP		Signalling RB information to setup 10.3.4.24	
>>RAB information list	OP	1 to <maxRABsetup>		Information for each RAB
>>>RAB information	MP		RAB information to setup 10.3.4.10	
Transport Channel Information Elements				
Uplink transport channels				
>>UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
>>UL transport channel information list	OP	1 to <MaxTrCH>		
>>>UL transport channel information	MP		Added or reconfigured UL TrCH information 10.3.5.2	
>>CHOICE mode	OP			
>>>FDD				
>>>>CPCH set ID	OP		CPCH set ID 10.3.5.5	
>>>>Transport channel information for DRAC list	OP	1 to <MaxTrCH>		
>>>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>>>TDD				(no data)
Downlink transport channels				
>>DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>DL transport channel information list	OP	1 to <MaxTrCH>		
>>>DL transport channel information	MP		Added or reconfigured DL TrCH information 10.3.5.1	
>>Measurement report	OP		MEASUREMENT REPORT 10.2.17	
>spare				(no data) Criticality: reject

Multi Bound	Explanation
MaxNoOfMeas	Maximum number of active measurements, upper limit 16

Condition	Explanation
Setup	The IE is mandatory when the IE Measurement command has the value "Setup", otherwise the IE is not needed.
Ciphering	The IE is mandatory when the IE Ciphering Status has the value "started" and the ciphering counters need not be reinitialised, otherwise the IE is not needed.
IP	The IE is mandatory when the IE Integrity protection status has the value "started" and the integrity protection counters need not be reinitialised, otherwise the IE is not needed.
PDCP	The IE is mandatory when the PDCP Info IE is present, otherwise the IE is not needed.

11.5 RRC information between network nodes

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

BEGIN

IMPORTS

    HandoverToUTRANCommand-r3,
    MeasurementReport,
    PhysicalChannelReconfiguration-r3,
    RadioBearerReconfiguration-r3,
    RadioBearerRelease-r3,
    RadioBearerSetup-r3,
    TransportChannelReconfiguration-r3,
    UECapabilityInformation
FROM PDU-definitions

-- Core Network IEs :
    CN-DomainIdentity,
    CN-DomainInformationList,
    NAS-SystemInformationGSM-MAP,
-- UTRAN Mobility IEs :
    CellIdentity,
    URA-Identity,
-- User Equipment IEs :
    C-RNTI,
    RRC-MessageSequenceNumber,
    U-RNTI,
    UE-RadioAccessCapability,
-- Radio Bearer IEs :
    PDCP-InfoReconfig,
```

```
    PredefinedConfigValueTag,
    RAB-InformationSetupList,
    RB-Identity,
    RB-MappingInfo,
    RLC-Info,
    SRB-InformationSetupList,
-- Transport Channel IEs :
    CPCH-SetID,
    DL-CommonTransChInfo,
    DL-AddReconfTransChInfoList,
    DRAC-StaticInformationList,
    UL-CommonTransChInfo,
    UL-AddReconfTransChInfoList,
-- Measurement IEs :
    MeasurementIdentity,
    MeasurementReportingMode,
    MeasurementType,
    AdditionalMeasurementID-List,
    PositionEstimate,
-- Other IEs :
    InterRATMessage
FROM InformationElements

    maxCNdomains,
    maxNoOfMeas,
    maxPredefConfig,
    maxRABsetup,
    maxRB,
    maxSRBsetup,
    maxTrCH
FROM Constant-definitions;

-- RRC information transferred between network nodes,
-- per group of information transfers having same endpoint
-- Alike class definitions for RRC PDUs

-- **************************************************
--
-- RRC information, to target RNC
--
-- **************************************************

-- **************************************************
--
-- RRC information, target RNC to source RNC
--
-- **************************************************

T-RNC-ToSRNC-Container ::= SEQUENCE {
    message             T-RNC-ToSRNC-ContainerType
}

T-RNC-ToSRNC-ContainerType::= CHOICE {
    radioBearerSetup                    RadioBearerSetup-r3,
    radioBearerReconfiguration          RadioBearerReconfiguration-r3,
    radioBearerRelease                  RadioBearerRelease-r3,
    transportChannelReconfiguration     TransportChannelReconfiguration-r3,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration-r3,
    extension                           NULL
}

-- **************************************************
--
-- RRC information, target RNC to source RAT
--
-- **************************************************

-- Container definitions, alike PDU definitions
-- RRC Container definition, to target RNC


-- **************************************************
--
-- SRNC Relocation information
--
-- **************************************************

SRNC-RelocationInfo ::=             SEQUENCE {
```

```
    -- Non-RRC IEs
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
        cipheringStatus                 CipheringStatus,
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        cipheringInfoPerRB-List         CipheringInfoPerRB-List             OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        integrityProtectionStatus       IntegrityProtectionStatus,
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
    -- Other IEs
        interRATMessage             InterRATMessage                 OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainInformationList        CN-DomainInformationList            OPTIONAL,
    -- Measurement IEs
        ongoingMeasRepList              OngoingMeasRepList                  OPTIONAL,
    -- Radio bearer IEs
        preConfigStatusInfo             PreConfigStatusInfo,
        srb-InformationList             SRB-InformationSetupList,
        rab-InformationList             RAB-InformationSetupList            OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList         OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL
}


-- IE definitions

UE-Positioning-LastKnownPos ::=     SEQUENCE {
        sfn                             INTEGER (0..4095),
        cell-id                         CellIdentity,
        positionEstimate                PositionEstimate,
}
```

3GPP TSG-RAN WG2 Meeting #20
Busan, South Korea, 9th – 13th April 2001

R2-011431

CR-Form-v3

CHANGE REQUEST

⌘ **25.331** **CR** **770** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	Transfer of Last known position in case of SRNS relocation
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	28.5.2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	In TS 25.305 v3.5.0 (R99) it is stated that the last known position and a time stamp of the position estimate UE should be transferred during SRNS relocation if available, since this could be useful information for the target RNC e.g. for RRM. The location is added to the RRC information for target RRC container as part of the WI "UE positioning support on Iub/Iur interfaces" SFN is proposed as the time stamp, although it is unambiguous only for 4096 ms. Since the probability of a position staying the same decreases with elapsed time, it is assumed that SFN should be sufficient and position estimates should only be transferred if the estimate was performed within the last 4096 ms. Additionally the value range of the IP_spacing parameters is different for TDD and FDD. This has already been taken into account in the NBAP and RANAP specifications and is corrected by this CR for RRC.
Summary of change:	⌘	- Last known position and time stamp is added to the RRC information for target RNC - value range of the IP_spacing parameter is different for TDD and FDD
Consequences if not approved:	⌘	Misalignment between stage 2 and stage 3 UE positioning.

Clauses affected:	⌘	14.12.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	ASN.1 will be added if this draft is agreed.

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

14.12.1 RRC Information to target RNC

RRC Information to target RNC may either be sent from source RNC or from another RAT. In case of handover to UTRAN, this information originates from another RAT, while in case of SRNC relocation the RRC information originates from the source RNC. In case of SRNC information, the RRC information transferred specifies the configuration of RRC and the lower layers it controls, e.g., including the radio bearer and transport channel configuration. It is used by the target RNC to initialise RRC and the lower layer protocols to facilitate SRNC relocation in a manner transparent to the UE.

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
Non RRC IEs				
CHOICE case	MP			
>Handover to UTRAN				
>>UE radio access capability	OP		UE radio access capability 10.3.3.42	
>>UE system specific capability	OP		UE system specific capability 14.13.2.4	
>>UE security information	OP		UE security information 14.13.2.2	
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	
>SRNC relocation				
>>State of RRC	MP		Enumerated (CELL_DCH, CELL_FACH,CELL_PCH, URA_PCH)	
>>State of RRC procedure	MP		Enumerated (await no RRC message, Complete, await RB Setup Complete, await RB Reconfiguration Complete, await RB Release Complete, await Transport CH Reconfiguration Complete, await Physical CH Reconfiguration Complete, await Active Set Update Complete, await Handover Complete, send Cell Update Confirm, send URA Update Confirm, , others)	
Ciphering related information				
>>Ciphering status	MP		Enumerated(Not started, Started)	
>>Calculation time for ciphering related information	CV *Ciphering*			Time when the ciphering information of the message were calculated, relative to a cell of the target RNC
>>>Cell Identity	MP		Cell Identity 10.3.2.2	Identity of one of the cells under the target RNC and included in the active set of the current call
>>>SFN	MP		Integer(0..4095)	
>>COUNT-C list	CV *Ciphering*	1 to <maxCN domains>		COUNT-C values for radio bearers using transparent mode RLC
>>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>>COUNT-C	MP		Bitstring(32)	
>>Ciphering info per radio bearer	OP	1 to <maxRB>		For signalling radio bearers this IE is mandatory.
>>>RB identity	MP		RB identity 10.3.4.16	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>>Downlink HFN	MP		Bitstring(20..25)	This IE is either RLC AM HFN (20 bits) or RLC UM HFN (25 bits)
>>>Uplink HFN	MP		Bitstring(20..25)	This IE is either RLC AM HFN (20 bits) or RLC UM HFN (25 bits)
Integrity protection related information				
>>Integrity protection status	MP		Enumerated(Not started, Started)	
>>Signalling radio bearer specific integrity protection information	CV *IP*	4 to <maxSRBsetup>		
>>>Uplink RRC HFN	MP		Bitstring (28)	
>>>Downlink RRC HFN	MP		Bitstring (28)	
>>>Uplink RRC Message sequence number	MP		Integer (0..15)	
>>>Downlink RRC Message sequence number	MP		Integer (0..15)	
>>Implementation specific parameters	OP		Bitstring (1..512)	
RRC IEs				
UE Information elements				
>>U-RNTI	MP		U-RNTI 10.3.3.47	
>>C-RNTI	OP		C-RNTI 10.3.3.8	
>>UE radio access Capability	MP		UE radio access capability 10.3.3.42	
>>Last known UE position	OP			
>>>SFN	MP		Integer (0..4095)	Time when position was estimated
>>>Cell ID	MP		Cell identity; 10.3.2.2	Indicates the cell, the SFN is valid for.
>>>CHOICE *Position estimate*	MP			
>>>>Ellipsoid Point			Ellipsoid Point; 10.3.8.4a	
>>>>Ellipsoid point with uncertainty circle			Ellipsoid point with uncertainty circle 10.3.8.4d	
>>>>Ellipsoid point with uncertainty ellipse			Ellipsoid point with uncertainty ellipse 10.3.8.4e	
>>>>Ellipsoid point with altitude			Ellipsoid point with altitude 10.3.8.4b	
>>>>Ellipsoid point with altitude and uncertainty ellipsoid			Ellipsoid point with altitude and uncertainty ellipsoid 10.3.8.4c	
Other Information elements				
>>Inter System message (inter system classmark)	OP		Inter-RAT message 10.3.8.8	
UTRAN Mobility Information elements				
>>URA Identifier	OP		URA identity 10.3.2.6	
CN Information Elements				
>>CN common GSM-MAP NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
>>CN domain related information	OP	1 to <MaxCN		CN related information to be

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
		domains >		provided for each CN domain
>>>CN domain identity	MP			
>>>CN domain specific GSM-MAP NAS system info	MP		NAS system information (GSM-MAP) 10.3.1.9	
Measurement Related Information elements				
>>For each ongoing measurement reporting	OP	1 to <MaxNo OfMeas>		
>>>Measurement Identity	MP		Measurement identity 10.3.7.48	
>>>Measurement Command	MP		Measurement command 10.3.7.46	
>>>Measurement Type	CV Setup		Measurement type 10.3.7.50	
>>>Measurement Reporting Mode	OP		Measurement reporting mode 10.3.7.49	
>>>Additional Measurements list	OP		Additional measurements list 10.3.7.1	
>>>CHOICE Measurement	OP			
>>>>Intra-frequency				
>>>>>Intra-frequency cell info	OP		Intra-frequency cell info list 10.3.7.33	
>>>>>Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
>>>>>Intra-frequency reporting quantity	OP		Intra-frequency reporting quantity 10.3.7.41	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>>CHOICE report criteria	OP			
>>>>>>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Inter-frequency				
>>>>>Inter-frequency cell info	OP		Inter-frequency cell info list 10.3.7.13	
>>>>>Inter-frequency measurement quantity	OP		Inter-frequency measurement quantity 10.3.7.18	
>>>>>Inter-frequency reporting quantity	OP		Inter-frequency reporting quantity 10.3.7.21	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>>CHOICE report criteria	OP			
>>>>>>Inter-frequency			Inter-frequency	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
measurement reporting criteria			measurement reporting criteria 10.3.7.19	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Inter-RAT				
>>>>>Inter-RAT cell info	OP		Inter-RAT cell info list 10.3.7.23	
>>>>>Inter-RAT measurement quantity	OP		Inter-RAT measurement quantity 10.3.7.29	
>>>>>Inter-RAT reporting quantity	OP		Inter-RAT reporting quantity 10.3.7.32	
>>>>>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>>>>>Measurement validity	OP		Measurement validity 10.3.7.51	
>>>>>CHOICE report criteria	OP			
>>>>>>Inter-RAT measurement reporting criteria			Inter-RAT measurement reporting criteria 10.3.7.30	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Traffic Volume				
>>>>>Traffic volume measurement Object	OP		Traffic volume measurement object 10.3.7.70	
>>>>>Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
>>>>>Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
>>>>>CHOICE report criteria	OP			
>>>>>>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.72	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>Quality				
>>>>>Quality measurement Object	OP		Quality measurement object	
>>>>>CHOICE report criteria	OP			
>>>>>>Quality measurement reporting criteria			Quality measurement reporting criteria 10.3.7.58	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>UE internal				
>>>>>UE internal measurement quantity	OP		UE internal measurement quantity 10.3.7.79	
>>>>>UE internal reporting quantity	OP		UE internal reporting quantity	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			10.3.7.82	
>>>>>CHOICE report criteria	OP			
>>>>>>UE internal measurement reporting criteria			UE internal measurement reporting criteria 10.3.7.80	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting			NULL	
>>>>UE positioning				
>>>>>LCS reporting quantity	OP		LCS reporting quantity 10.3.7.111	
>>>>>CHOICE report criteria	OP			
>>>>>>LCS reporting criteria			LCS reporting criteria 10.3.7.110	
>>>>>>Periodical reporting			Periodical reporting criteria 10.3.7.53	
>>>>>>No reporting				
Radio Bearer Information Elements				
>>Pre-defined configuration status information	OP		Pre-defined configuration status information 14.13.2.3	
>>Signalling RB information list	MP	1 to <maxSRBsetup>		For each signalling radio bearer
>>>Signalling RB information	MP		Signalling RB information to setup 10.3.4.24	
>>RAB information list	OP	1 to <maxRABsetup>		Information for each RAB
>>>RAB information	MP		RAB information to setup 10.3.4.10	
Transport Channel Information Elements				
Uplink transport channels				
>>UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
>>UL transport channel information list	OP	1 to <MaxTrCH>		
>>>UL transport channel information	MP		Added or reconfigured UL TrCH information 10.3.5.2	
>>CHOICE mode	OP			
>>>FDD				
>>>>CPCH set ID	OP		CPCH set ID 10.3.5.5	
>>>>Transport channel information for DRAC list	OP	1 to <MaxTrCH>		
>>>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>>>TDD				(no data)
Downlink transport channels				
>>DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>DL transport channel information list	OP	1 to <MaxTrCH>		
>>>DL transport channel information	MP		Added or reconfigured DL TrCH information 10.3.5.1	
>>Measurement report	OP		MEASUREMENT REPORT 10.2.17	
>spare				(no data) Criticality: reject

Multi Bound	Explanation
MaxNoOfMeas	Maximum number of active measurements, upper limit 16

Condition	Explanation
Setup	The IE is mandatory when the IE Measurement command has the value "Setup", otherwise the IE is not needed.
Ciphering	The IE is mandatory when the IE Ciphering Status has the value "started" and the ciphering counters need not be reinitialised, otherwise the IE is not needed.
IP	The IE is mandatory when the IE Integrity protection status has the value "started" and the integrity protection counters need not be reinitialised, otherwise the IE is not needed.
PDCP	The IE is mandatory when the PDCP Info IE is present, otherwise the IE is not needed.

11.5 RRC information between network nodes

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

BEGIN

IMPORTS

    HandoverToUTRANCommand-r3,
    MeasurementReport,
    PhysicalChannelReconfiguration-r3,
    RadioBearerReconfiguration-r3,
    RadioBearerRelease-r3,
    RadioBearerSetup-r3,
    TransportChannelReconfiguration-r3,
    UECapabilityInformation
FROM PDU-definitions

-- Core Network IEs :
    CN-DomainIdentity,
    CN-DomainInformationList,
    NAS-SystemInformationGSM-MAP,
-- UTRAN Mobility IEs :
    CellIdentity,
    URA-Identity,
-- User Equipment IEs :
    C-RNTI,
    RRC-MessageSequenceNumber,
    U-RNTI,
    UE-RadioAccessCapability,
-- Radio Bearer IEs :
    PDCP-InfoReconfig,
    PredefinedConfigValueTag,
    RAB-InformationSetupList,
    RB-Identity,
    RB-MappingInfo,
```

```
    RLC-Info,
    SRB-InformationSetupList,
-- Transport Channel IEs :
    CPCH-SetID,
    DL-CommonTransChInfo,
    DL-AddReconfTransChInfoList,
    DRAC-StaticInformationList,
    UL-CommonTransChInfo,
    UL-AddReconfTransChInfoList,
-- Measurement IEs :
    MeasurementIdentity,
    MeasurementReportingMode,
    MeasurementType,
    AdditionalMeasurementID-List,
    PositionEstimate,
-- Other IEs :
    InterRATMessage
FROM InformationElements

    maxCNdomains,
    maxNoOfMeas,
    maxPredefConfig,
    maxRABsetup,
    maxRB,
    maxSRBsetup,
    maxTrCH
FROM Constant-definitions;

-- RRC information transferred between network nodes,
-- per group of information transfers having same endpoint
-- Alike class definitions for RRC PDUs

-- **************************************************
--
-- RRC information, to target RNC
--
-- **************************************************

-- **************************************************
--
-- RRC information, target RNC to source RNC
--
-- **************************************************

T-RNC-ToSRNC-Container ::= SEQUENCE {
    message             T-RNC-ToSRNC-ContainerType
}

T-RNC-ToSRNC-ContainerType::= CHOICE {
    radioBearerSetup                    RadioBearerSetup-r3,
    radioBearerReconfiguration          RadioBearerReconfiguration-r3,
    radioBearerRelease                  RadioBearerRelease-r3,
    transportChannelReconfiguration     TransportChannelReconfiguration-r3,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration-r3,
    extension                           NULL
}

-- **************************************************
--
-- RRC information, target RNC to source RAT
--
-- **************************************************

-- Container definitions, alike PDU definitions
-- RRC Container definition, to target RNC


-- **************************************************
--
-- SRNC Relocation information
--
-- **************************************************

SRNC-RelocationInfo ::=             SEQUENCE {
    -- Non-RRC IEs
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
        cipheringStatus                 CipheringStatus,
```

```
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        cipheringInfoPerRB-List         CipheringInfoPerRB-List             OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        integrityProtectionStatus       IntegrityProtectionStatus,
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
    -- Other IEs
        interRATMessage             InterRATMessage                 OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainInformationList        CN-DomainInformationList            OPTIONAL,
    -- Measurement IEs
        ongoingMeasRepList              OngoingMeasRepList                  OPTIONAL,
    -- Radio bearer IEs
        preConfigStatusInfo             PreConfigStatusInfo,
        srb-InformationList             SRB-InformationSetupList,
        rab-InformationList             RAB-InformationSetupList            OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList         OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL
        nonCriticalExtensions           SEQUENCE {
        -- In case of TDD only this IE is present otherwise this IE is absent
            up-Ipdl-Parameters-TDD          UP-IPDL-Parameters-TDD          OPTIONAL,
        -- Extension mechanism for non- release4 information
            nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
}

-- RRC Container definition, target RNC to source RNC
-- Nothing new, only re-using RRC PDUs
--
-- RRC Container definition, target RNC to source system
-- Nothing new, re-using RRC PDUs (HandoverToUTRANCommand)

-- IE definitions

UE-Positioning-LastKnownPos ::=     SEQUENCE {
        sfn                             INTEGER (0..4095),
        cell-id                         CellIdentity,
        positionEstimate                PositionEstimate,
}
```

3GPP TSG-RAN WG2 Meeting #21
Busan, Korea, 21-25 May 2001

Tdoc R2-011433

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **771** ⌘ ev **r1** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Corrections to UE Positioning measurements
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	14th May 2001
Category:	⌘	**F**
Release:	⌘	R99

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)

Reason for change: ⌘ It is proposed to improve the accuracy indicator in UE positioning measurement request in RRC 25.331 specification. The OTDOA measurement quality indication from the UE to the Serving Mobile Location Center (SMLC) in the same specification is inadequate and misses the number of measurements that is essential for location estimation. Furthermore, one UE positioning error reason is proposed to be added in case the reference base station is not the serving one in GPS positioning.

The SFN-SFN observed time difference type 2 measurement in TDD can be performed on any channel. The channel to measure on is given to UE in the IE "UP neighbour cell info" within IE "cell and channel ID". The channel is identified by Burst type, Midamble shift and slot. The slot is missing in the IE "cell and channel ID".

Basic Midamble is defined already as Cell parameters ID, therefore the existing IE is used in "cell and channel ID".

Rx-Tx Time difference measurement is for FDD only.

Summary of change: ⌘ - Unit of accuracy changed. OTDOA quality indicators changed and number of measurements added. One error reason added.
- Time slot is added to "cell and channel ID".
- Basic Midamble is repalced by cell parameters ID.
- Choice Mode is introduced in "UE positioning OTDOA measurement" IE so that Rx-Tx Time difference is only reported in case of FDD.

Backward compatibility: ASN.1 definitions are affected. However, all the affected definitions are related only to UE positioning measurements.

Consequences if ⌘ If this CR is not approved, the UE Positioning function in the UTRAN/UE will not

not approved:	be able to perform properly.

Clauses affected:	⌘	10.3.6.8a; 10.3.7.87, 10.3.7.105, 10.3.7.107, 11	
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘
Other comments:	⌘		

10.3.6.8a Cell and Channel Identity info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Burst type	MP		Enumerated (Type1, Type2)	Identifies the channel in combination with the Midamble shift and slot number~~Offset~~
Midamble Shift	MP		Integer (1…16)	
Time Slot	OP		Timeslot number 10.3.6.84	This IE is present only if no IPDL scheme is configured in the reference cell. Otherwise the slot is defined by the IPDL configuration.
Cell parameters ID~~Basic Midamble Number~~	MP		Cell parameters ID 10.3.6.9~~Integer (0…127)~~	Identifies the cell

10.3.7.87 UE positioning Error

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Error reason	MP		Enumerated(ER1, ER2, ER3, ER4, ER5, ER6, ER7, ER8)	Note 1
GPS Additional Assistance Data Request	OP		UE positioning GPS Additional Assistance Data Request 10.3.7.88a	

NOTE 1: The following table gives the mapping of the IE "Error reason"

Value	Indication
ER1	There were not enough cells to be received when performing mobile based OTDOA-IPDL.
ER2	There were not enough GPS satellites to be received, when performing UE-based GPS location.
ER3	Location calculation assistance data missing.
ER4	Requested method not supported.
ER5	Undefined error.
ER6	Location request denied by the user.
ER7	Location request not processed by the user and timeout
ER8	Reference cell for GPS is not the serving cell

10.3.7.105 UE positioning OTDOA measurement

The purpose of the OTDOA Measurement Information element is to provide OTDOA measurements of signals sent from the reference and neighbour cells.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SFN	MP		Integer(0..4095)	SFN during which the last measurement was performed
CHOICE mode				
>FDD				
>>UE Rx-Tx time difference type 2	MP		UE Rx-Tx time difference type 2 10.3.7.84	
>TDD				(no data)
~~UE positioning OTDOA quality type~~	~~MP~~		~~UE positioning OTDOA quality type 10.3.7.107~~	
Neighbours	MP	0 to <maxCellMeas>		
>CHOICE mode				
>>FDD				
>>>Neighbour Identity	MD		Primary CPICH info 10.3.6.60	Default value is the same as in the first set of multiple sets.
>>>UE Rx-Tx time difference type 2	OP		UE Rx-Tx time difference type 2 10.3.7.84	Included if the neighbour is in the active set
>>TDD				
>>>Cell and Channel ID	MD		Cell and Channel Identity info 10.3.6.8a	Default value is the same as in the first set of multiple sets.
>UE positioning OTDOA quality type	MP		UE positioning OTDOA quality type 10.3.7.107	Quality of the OTDOA from the neighbour cell.
>SFN-SFN observed time difference	MP		SFN-SFN observed time difference 10.3.7.63	Gives the timing relative to the reference cell. Only type 2 is allowed. Type 2 means that only the slot timing is accounted for
~~>UE Rx-Tx time difference type 2~~	~~OP~~		~~UE Rx-Tx time difference type 2 10.3.7.84~~	~~Included if the neighbour is in the active set~~

10.3.7.107 UE positioning OTDOA quality ~~type~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~CHOICE Quality type~~	~~MP~~			
~~>STD_10~~				
~~>>Reference Quality 10~~	~~MP~~		~~Integer(10..320 by step of 10)~~	~~Std of TOA measurements from the cell~~
~~>STD_50~~				
~~>>Reference Quality 50~~	~~MP~~		~~Integer(50..1600 by step of 50)~~	~~Std of TOA measurements from the cell~~
~~>CPICH Ec/N0~~				
~~>>CPICH Ec/N0~~	~~MP~~		~~Enumerated(< –24, -24 dB ≤ CPICH Ec/No < –23 dB,.. –1 dB ≤ CPICH Ec/No < –0 dB, >=0 dB)~~	~~CPICH Ec/N0 for the measurement~~
~~>DEFAULT_QUALITY~~				
~~>>Reference Quality~~	~~MP~~		~~Enumerated(0-19 meters, 20-39 meters, 40-79 meters, 80-159 meters, 160-319 meters, 320-639 meters, 640-1319 meters over 1320 meters)~~	~~Estimated error in meters.~~
Std Resolution	MP		Bit string(2)	Std Resolution field includes the resolution used in Std of OTDOA Measurements field. Encoding on two bits as follows: '00' 10 meters '01' 20 meters '10' 30 meters '11' Reserved
Number of OTDOA Measurements	MP		Bit string(3)	Number of measurements field is used together with Std of OTDOA Measurements field to define quality of a reported OTDOA measurement. The field indicates how many OTDOA measurements have been used in the UE to define the standard deviation of the measurements. Following 3 bit encoding is used: '000' 0-4 '001' 5-9 '010' 10-14 '011' 15-24 '100' 25-34 '101' 35-44 '110' 45-54 '111' 55 or more
Std of OTDOA Measurements	MP		Bit string(5)	Std of OTDOA Measurements

				field includes standard deviation of OTDOA measurements. Following linear 5 bit encoding is used: '00000' 0 - (R*1-1) meters '00001' R*1 – (R*2-1) meters '00010' R*2 – (R*3-1) meters … '11111' R*31 meters or more where R is the resolution defined by Std Resolution field. Eg. R=20 m corresponds to 0-19 m, 20-39 m,…,620+ m.

~~**CHOICE *Quality type***~~	~~**Condition under which the given quality type is chosen**~~
~~STD_10~~	~~Chosen when the quality type is standard deviation with a step-size of 10 m~~
~~STD_50~~	~~Chosen when the quality type is standard deviation with a step-size of 50 m~~
~~CPICH Ec/N0~~	~~Chosen when the quality type is CPICH Ec/N0~~
~~Default~~	~~Chosen if the quality type field is not included.~~

10.3.7.111 UE positioning reporting quantity

The purpose of the element is to express the allowed/required location method(s), and to provide information required QoS.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Method Type	MP		Enumerated(UE assisted, UE based, UE based is preferred but UE assisted is allowed, UE assisted is preferred but UE based is allowed)	
Positioning Methods	MP		Enumerated(OTDOA, GPS, OTDOA or GPS)	
Response Time	MP		Integer(1,2,4, 8, 16, 32, 64, 128)	in seconds
Accuracy	CV-*MethodType*		Integer (0..100)	in percentage
GPS timing of Cell wanted	MP		Boolean	If true the SRNC wants the UE to report the SFN-GPS timing of the reference cell. This is however optional in the UE.
Multiple Sets	MP		Boolean	TRUE indicates that the UE is requested to send multiple *OTDOA/GPS Measurement Information Sets*. UE is expected to include the current measurement set.
Additional Assistance Data Request	MP		Boolean	TRUE indicates that the UE is requested to send the IE "Additional assistance Data Request" when the IE "UE positioning Error" is present in the UE positioning measured results.
Environment Characterisation	OP		Enumerated(possibly heavy multipath and NLOS conditions, no or light multipath and usually LOS conditions, not defined or mixed environment)	

Condition	Explanation
Method Type	The IE is optional if the IE "Method Type" is 'UE assisted'; otherwise it is mandatory

11.3 Information element definitions

```
-- **************************************************
--
--     PHYSICAL CHANNEL INFORMATION ELEMENTS (10.3.6)
--
-- **************************************************

CellAndChannelIdentity ::=          SEQUENCE {
    burstType                           BurstType,
    midambleShift                       MidambleShiftLong,
    timeslot                            TimeSlotNumber,
    cellParametersID                    CellParametersID
    basicMidambleNumber                 INTEGER (0..127)
    }


-- **************************************************
--
--     MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- **************************************************

-- IE value 0 = <-24 dB, 1 = between -24 and -23 and so on
CPICH-Ec-N0-OTDOA ::=               INTEGER (0..26)


Neighbour ::=                       SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            neighbourIdentity                   PrimaryCPICH-Info                   OPTIONAL
            uE-RX-TX-TimeDifferenceType2        UE-RX-TX-TimeDifferenceType2        OPTIONAL
        },
        tdd                             SEQUENCE {
            neighbourAndChannelIdentity     CellAndChannelIdentity                  OPTIONAL
        }
    },
    neighbourQualntity                  NeighbourQualntity,
    sfn-SFN-ObsTimeDifference2          SFN-SFN-ObsTimeDifference2,
    uE-RX-TX-TimeDifferenceType2        UE-RX-TX-TimeDifferenceType2            OPTIONAL
}

NeighbourList ::=                   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        Neighbour

-- **TODO**, to be defined fully
NeighbourQualntity ::=              SEQUENCE {
                                        UE-Positioning-OTDOA-Quality
}

ReferenceQuality ::=                ENUMERATED {
                                        m0-19, m20-39, m40-79,
                                        m80-159, m160-319, m320-639,
                                        m640-1319, m1320Plus }

-- Actual value = IE value * 10
ReferenceQuality10 ::=              INTEGER (1..32)

-- Actual value = IE value * 50
ReferenceQuality50 ::=              INTEGER (1..32)


UE-Positioning-Accuracy ::=             BIT STRING (SIZE (7))

UE-Positioning-ErrorCause ::=               ENUMERATED {
                                    notEnoughOTDOA-Cells,
                                    notEnoughGPS-Satellites,
                                    assistanceDataMissing,
                                    methodNotSupported,
                                    undefinedError,
```

```
                                    requestDeniedByUser,
                                    notProcessedAndTimeout,
                                    referenceCellNotServingCell }


UE-Positioning-OTDOA-Measurement ::=            SEQUENCE {
    sfn                                 INTEGER (0..4095),
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            ue-RX-TX-TimeDifferenceType2        UE-RX-TX-TimeDifferenceType2,
        },
        tdd                             NULL,
    qualityChoice                       CHOICE {
        std-10                              ReferenceQuality10,
        std-50                              ReferenceQuality50,
        cpich-EcN0                          CPICH-Ec-N0-OTDOA,
        defaultQuality                      ReferenceQuality
    },
    }
    neighbourList                   NeighbourList                       OPTIONAL
}


UE-Positioning-OTDOA-Quality ::=            SEQUENCE {
    stdResolution                   BIT STRING (SIZE (2)),
    numberOfOTDOA-Measurements      BIT STRING (SIZE (3)),
    stdOfOTDOA-Measurements         BIT STRING (SIZE (5))
}
```

3GPP TSG-RAN WG2 Meeting #21
Busan, Korea, 21-25 May 2001

Tdoc R2-011434

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 772** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Corrections to UE Positioning measurements
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	24th May 2001
Category:	⌘	**A**
Release:	⌘	REL-4

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)

Reason for change: ⌘ It is proposed to improve the accuracy indicator in UE positioning measurement request in RRC 25.331 specification. The OTDOA measurement quality indication from the UE to the Serving Mobile Location Center (SMLC) in the same specification is inadequate and misses the number of measurements that is essential for location estimation. Furthermore, one UE positioning error reason is proposed to be added in case the reference base station is not the serving one in GPS positioning.

The SFN-SFN observed time difference type 2 measurement in TDD can be performed on any channel. The channel to measure on is given to UE in the IE "UP neighbour cell info" within IE "cell and channel ID". The channel is identified by Burst type, Midamble shift and slot. The slot is missing in the IE "cell and channel ID".

Basic Midamble is defined already as Cell parameters ID, therefore the existing IE is used in "cell and channel ID".

Rx-Tx Time difference measurement is for FDD only.

Summary of change: ⌘ - Unit of accuracy changed. OTDOA quality indicators changed and number of measurements added. One error reason added.
- Time slot is added to "cell and channel ID".
- Basic Midamble is repalced by cell parameters ID.
- Choice Mode is introduced in "UE positioning OTDOA measurement" IE so that Rx-Tx Time difference is only reported in case of FDD.

Backward compatibility: ASN.1 definitions are affected. However, all the affected definitions are related only to UE positioning measurements.

Consequences if ⌘ If this CR is not approved, the UE Positioning function in the UTRAN/UE will not

not approved:	be able to perform properly.

Clauses affected:	⌘	10.3.6.8a; 10.3.7.87, 10.3.7.105, 10.3.7.107, 11	
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘
Other comments:	⌘	This is the shadow CR of CR773	

10.3.6.8a Cell and Channel Identity info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Burst type	MP		Enumerated (Type1, Type2)	Identifies the channel in combination with the Midamble shift and slot number~~Offset~~
Midamble Shift	MP		Integer (1…16)	
Time Slot	OP		Timeslot number 10.3.6.84	This IE is present only if no IPDL scheme is configured in the reference cell. Otherwise the slot is defined by the IPDL configuration.
Cell parameters ID~~Basic Midamble Number~~	MP		Cell parameters ID 10.3.6.9~~Integer (0…127)~~	Identifies the cell

10.3.7.87 UE positioning Error

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Error reason	MP		Enumerated(ER1, ER2, ER3, ER4, ER5, ER6, ER7, ER8)	Note 1
GPS Additional Assistance Data Request	OP		UE positioning GPS Additional Assistance Data Request 10.3.7.88a	

NOTE 1: The following table gives the mapping of the IE "Error reason"

Value	Indication
ER1	There were not enough cells to be received when performing mobile based OTDOA-IPDL.
ER2	There were not enough GPS satellites to be received, when performing UE-based GPS location.
ER3	Location calculation assistance data missing.
ER4	Requested method not supported.
ER5	Undefined error.
ER6	Location request denied by the user.
ER7	Location request not processed by the user and timeout
ER8	Reference cell for GPS is not the serving cell

10.3.7.105 UE positioning OTDOA measurement

The purpose of the OTDOA Measurement Information element is to provide OTDOA measurements of signals sent from the reference and neighbour cells.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SFN	MP		Integer(0..4095)	SFN during which the last measurement was performed
CHOICE mode				
>FDD				
>>UE Rx-Tx time difference type 2	MP		UE Rx-Tx time difference type 2 10.3.7.84	
>TDD				(no data)
~~UE positioning OTDOA quality type~~	~~MP~~		~~UE positioning OTDOA quality type 10.3.7.107~~	
Neighbours	MP	0 to <maxCellMeas>		
>CHOICE mode				
>>FDD				
>>>Neighbour Identity	MD		Primary CPICH info 10.3.6.60	Default value is the same as in the first set of multiple sets.
>>>UE Rx-Tx time difference type 2	OP		UE Rx-Tx time difference type 2 10.3.7.84	Included if the neighbour is in the active set
>>TDD				
>>>Cell and Channel ID	MD		Cell and Channel Identity info 10.3.6.8a	Default value is the same as in the first set of multiple sets.
>UE positioning OTDOA quality type	MP		UE positioning OTDOA quality type 10.3.7.107	Quality of the OTDOA from the neighbour cell.
>SFN-SFN observed time difference	MP		SFN-SFN observed time difference 10.3.7.63	Gives the timing relative to the reference cell. Only type 2 is allowed. Type 2 means that only the slot timing is accounted for
~~>UE Rx-Tx time difference type 2~~	~~OP~~		~~UE Rx-Tx time difference type 2 10.3.7.84~~	~~Included if the neighbour is in the active set~~

10.3.7.107 UE positioning OTDOA quality ~~type~~

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
~~CHOICE Quality type~~	~~MP~~			
~~>STD_10~~				
~~>>Reference Quality 10~~	~~MP~~		~~Integer(10..320 by step of 10)~~	~~Std of TOA measurements from the cell~~
~~>STD_50~~				
~~>>Reference Quality 50~~	~~MP~~		~~Integer(50..1600 by step of 50)~~	~~Std of TOA measurements from the cell~~
~~>CPICH Ec/N0~~				
~~>>CPICH Ec/N0~~	~~MP~~		~~Enumerated(< –24, -24 dB ≤ CPICH Ec/No < –23 dB,.. –1 dB ≤ CPICH Ec/No < –0 dB, >=0 dB)~~	~~CPICH Ec/N0 for the measurement~~
~~>DEFAULT_QUALITY~~				
~~>>Reference Quality~~	~~MP~~		~~Enumerated(0-19 meters, 20-39 meters, 40-79 meters, 80-159 meters, 160-319 meters, 320-639 meters, 640-1319 meters over 1320 meters)~~	~~Estimated error in meters.~~
Std Resolution	MP		Bit string(2)	Std Resolution field includes the resolution used in Std of OTDOA Measurements field. Encoding on two bits as follows: '00' 10 meters '01' 20 meters '10' 30 meters '11' Reserved
Number of OTDOA Measurements	MP		Bit string(3)	Number of measurements field is used together with Std of OTDOA Measurements field to define quality of a reported OTDOA measurement. The field indicates how many OTDOA measurements have been used in the UE to define the standard deviation of the measurements. Following 3 bit encoding is used: '000' 0-4 '001' 5-9 '010' 10-14 '011' 15-24 '100' 25-34 '101' 35-44 '110' 45-54 '111' 55 or more
Std of OTDOA Measurements	MP		Bit string(5)	Std of OTDOA Measurements

				field includes standard deviation of OTDOA measurements. Following linear 5 bit encoding is used: '00000' 0 - (R*1-1) meters '00001' R*1 – (R*2-1) meters '00010' R*2 – (R*3-1) meters … '11111' R*31 meters or more where R is the resolution defined by Std Resolution field. Eg. R=20 m corresponds to 0-19 m, 20-39 m,…,620+ m.

~~**CHOICE *Quality type***~~	~~**Condition under which the given quality type is chosen**~~
~~STD_10~~	~~Chosen when the quality type is standard deviation with a step-size of 10 m~~
~~STD_50~~	~~Chosen when the quality type is standard deviation with a step-size of 50 m~~
~~CPICH Ec/N0~~	~~Chosen when the quality type is CPICH Ec/N0~~
~~Default~~	~~Chosen if the quality type field is not included.~~

10.3.7.111 UE positioning reporting quantity

The purpose of the element is to express the allowed/required location method(s), and to provide information required QoS.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Method Type	MP		Enumerated(UE assisted, UE based, UE based is preferred but UE assisted is allowed, UE assisted is preferred but UE based is allowed)	
Positioning Methods	MP		Enumerated(OTDOA, GPS, OTDOA or GPS)	
Response Time	MP		Integer(1,2,4, 8, 16, 32, 64, 128)	in seconds
Accuracy	CV-*MethodType*		Integer (0..100)	in percentage
GPS timing of Cell wanted	MP		Boolean	If true the SRNC wants the UE to report the SFN-GPS timing of the reference cell. This is however optional in the UE.
Multiple Sets	MP		Boolean	TRUE indicates that the UE is requested to send multiple *OTDOA/GPS Measurement Information Sets*. UE is expected to include the current measurement set.
Additional Assistance Data Request	MP		Boolean	TRUE indicates that the UE is requested to send the IE "Additional assistance Data Request" when the IE "UE positioning Error" is present in the UE positioning measured results.
Environment Characterisation	OP		Enumerated(possibly heavy multipath and NLOS conditions, no or light multipath and usually LOS conditions, not defined or mixed environment)	

Condition	Explanation
Method Type	The IE is optional if the IE "Method Type" is 'UE assisted'; otherwise it is mandatory

11.3 Information element definitions

```
-- **************************************************
--
--     PHYSICAL CHANNEL INFORMATION ELEMENTS (10.3.6)
--
-- **************************************************

CellAndChannelIdentity ::=          SEQUENCE {
    burstType                           BurstType,
    midambleShift                       MidambleShiftLong,
    timeslot                            TimeSlotNumber,
    cellParametersID                    CellParametersID
    basicMidambleNumber                 INTEGER (0..127)
    }


-- **************************************************
--
--     MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- **************************************************

-- IE value 0 = <-24 dB, 1 = between -24 and -23 and so on
CPICH-Ec-N0-OTDOA ::=               INTEGER (0..26)


Neighbour ::=                       SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            neighbourIdentity                   PrimaryCPICH-Info                   OPTIONAL
            uE-RX-TX-TimeDifferenceType2        UE-RX-TX-TimeDifferenceType2        OPTIONAL
        },
        tdd                             SEQUENCE {
            neighbourAndChannelIdentity     CellAndChannelIdentity                  OPTIONAL
        }
    },
    neighbourQualntity                  NeighbourQualntity,
    sfn-SFN-ObsTimeDifference2          SFN-SFN-ObsTimeDifference2,
    uE-RX-TX-TimeDifferenceType2        UE-RX-TX-TimeDifferenceType2            OPTIONAL
}

NeighbourList ::=                   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        Neighbour

-- **TODO**, to be defined fully
NeighbourQualntity ::=              SEQUENCE {
                                        UE-Positioning-OTDOA-Quality
}

ReferenceQuality ::=                ENUMERATED {
                                        m0-19, m20-39, m40-79,
                                        m80-159, m160-319, m320-639,
                                        m640-1319, m1320Plus }

-- Actual value = IE value * 10
ReferenceQuality10 ::=              INTEGER (1..32)

-- Actual value = IE value * 50
ReferenceQuality50 ::=              INTEGER (1..32)


UE-Positioning-Accuracy ::=             BIT STRING (SIZE (7))

UE-Positioning-ErrorCause ::=               ENUMERATED {
                                    notEnoughOTDOA-Cells,
                                    notEnoughGPS-Satellites,
                                    assistanceDataMissing,
                                    methodNotSupported,
                                    undefinedError,
```

```
                                    requestDeniedByUser,
                                    notProcessedAndTimeout,
                                    referenceCellNotServingCell }


UE-Positioning-OTDOA-Measurement ::=            SEQUENCE {
    sfn                                 INTEGER (0..4095),
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            ue-RX-TX-TimeDifferenceType2        UE-RX-TX-TimeDifferenceType2,
        },
        tdd                             NULL,
    qualityChoice                       CHOICE {
        std-10                              ReferenceQuality10,
        std-50                              ReferenceQuality50,
        cpich-EcN0                          CPICH-Ec-N0-OTDOA,
        defaultQuality                      ReferenceQuality
    },
    }
    neighbourList                   NeighbourList                       OPTIONAL
}


UE-Positioning-OTDOA-Quality ::=            SEQUENCE {
    stdResolution                   BIT STRING (SIZE (2)),
    numberOfOTDOA-Measurements      BIT STRING (SIZE (3)),
    stdOfOTDOA-Measurements         BIT STRING (SIZE (5))
}
```

3GPP TSG-RAN WG2 Meeting #21
Busan, South Korea, 21st–25th May 2001

Tdoc R2-011256

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **778** ⌘ ev **r1** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	GSM measurements in compressed mode
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	23rd May 2001
Category:	⌘	**F**
Release:	⌘	R99

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)

Reason for change: ⌘
- The behaviour of the UE is not fully described when the network does not provide all GSM measurements purposes in parallel.
- Procedual description of inter-RAT measurements and reporting is not consistent in Section 8.6.7.5, Section 8.6.7.6 and in the IE "Inter-RAT measured results list".

Summary of change: ⌘
- Reference to TS25.133 is included into Section 8.6.7.5 in order to ensure that TS25.331 and TS25.133 are aligned.
- UE behaviour in case the BSIC of a GSM cell is not verified, although BSIC verification is required, is corrected to correspond the text in Section 8.6.7.6 and that the IE "Inter-RAT measured results list".
- The UE behaviour is described also in the case the network does not provide all GSM compressed mode pattern sequences in parallel.
- Reference to TS25.133 is included into BSIC identification and re-confirmation sections (14.3.2.2 and 14.3.2.3 respectively) in order to ensure that all UE performs BSIC verification on the same manner.

Backward compatibility: The CR does not affect backward compatibility if the specification has been understood as stated in the added clarifications.

Consequences if not approved: ⌘
- Different terminals may behave differently when performing GSM measurements.
- Contradiction between different sections of TS25.331
- BSIC verification procedure defined in TS25.133 is not fully taken into account in the behaviour of UE

Clauses affected: ⌘ 8.6.7.5, 8.6.7.6, 14.3.2.2, 14.3.2.3

Other specs affected: ⌘
- ☐ 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/3G_Specs/CRs.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.

8.6.7.5 Inter-RAT measurement quantity

If the IE "Inter-RAT measurement quantity" is received in a MEASUREMENT CONTROL message and CHOICE system is GSM, the UE shall:

- if IE "BSIC verification required" is set to "required", for cells that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", and that has a "verified" BSIC:
  - report measurement quantities according to IE "inter-RAT reporting quantity" taking into account the restrictions defined in Section 8.6.7.6.;
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria". The UE shall perform event evaluation for event-triggered reporting after BSIC has been verified for a GSM cell as defined in [19]. Periodical reports shall be triggered according to the given "Reporting interval" even if the BSIC of GSM cell has not been verified. Non verfied BSIC shall be indicated for a GSM cell in the "Inter-RAT measured results list" IE as defined in Section 8.6.7.6;
- if IE "BSIC verification required" is set to "not required", for cells that match any of the BCCH ARFCN in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", regardless if the BSIC is "verified" or "non-verified":
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if the IE "Measurement quantity" is set to "pathloss"; and
- for any inter-RAT cell indicated by the IE "Cells for measurement", the IE "Output power" in the inter-RAT cell info list in the variable CELL_INFO_LIST is not present:
  - set the variable CONFIGURATION_INCOMPETE to TRUE.

NOTE: The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

8.6.7.6 Inter-RAT reporting quantity

If the IE "Inter-RAT reporting quantity" is received by the UE, the UE shall:

- store the content of the IE to the variable MEASUREMENT_IDENTITY.

If the IE "Inter-RAT measurement quantity" is received and CHOICE system is GSM, the UE shall check each quantity in the GSM choice. The UE shall include measured results in MEASUREMENT REPORT as specified in the IE "Inter-RAT reporting quantity" with the following restrictions:

- if the UE has not confirmed the BSIC of the measured cell:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" is active, the UE is not required to include the " inter-RAT cell id ~~BSIC~~" nor "Observed time difference to GSM cell" in the IE "Inter-RAT measured results list~~Measured results~~", when a MEASUREMENT REPORT is triggered.
- if the UE has confirmed the BSIC of the measured cell, then:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" nor "BSIC re-confirmation" is active, the UE is not required to include the " inter-RAT cell id ~~BSIC~~" nor "Observed time difference to GSM cell" in the IE "Inter-RAT measured results list~~Measured results~~", when a MEASUREMENT REPORT is triggered. If no compressed mode pattern sequence with measurement purpose "GSM carrier RSSI measurements" is active, the UE may include "inter-RAT cell id" or "Observed time difference to GSM cell" in MEASUMENT REPORT without "GSM carrier RSSI" even if it is defined in the IE "Inter-RAT reporting quantity".
- if IE "Pathloss" is set to "TRUE":

- include optional IE "Pathloss" with a value set to the measured pathloss to that GSM cell in IE "Inter-RAT measured results list";

- if IE "Observed time difference to GSM cell" is set to "TRUE":

  - include optional IE "Observed time difference to GSM cell" with the value set to the time difference to that GSM cell for the GSM cells that have a BSIC that is "verified", and that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list". Observed time difference to GSM cells with "non-verified" BSIC shall not be included;

- if IE "GSM Carrier RSSI" is set to "TRUE":

  - include optional IE "GSM Carrier RSSI" with a value set to the measured RXLEV to that GSM cell in IE "Inter-RAT measured results list". If no compressed mode pattern sequence specified with measurement purpose "GSM carrier RSSI measurements" is active, the UE is not required to include the "GSM carrier RSSI" in the IE " Inter-RAT measured results list ", when a MEASUREMENT REPORT is triggered;

- if the BSIC of reported GSM cell is "verified":

  - set the CHOICE BSIC to "Verified BSIC" and IE "inter-RAT cell id" to the value that GSM cell had in the IE "Inter-RAT cell info list";

- if the BSIC of reported GSM cell is "non-verified":

  - set the CHOICE BSIC to "Non verified BSIC" and the IE "BCCH ARFCN" to the value of that GSM cells ARFCN;

The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

***** NEXT MODIFIED SECTIONS *******

14.3.2 GSM measurements in compressed mode

14.3.2.1 GSM RSSI measurements

The UE shall perform GSM RSSI measurements in the gaps of compressed mode pattern sequence specified for GSM RSSI measurement purpose. The UE cannot be required to measure "Observed time difference to GSM" in gaps specified for this purpose.

14.3.2.2 Initial BSIC identification

The UE shall perform Initial BSIC identification in compressed mode pattern sequence specified for Initial BSIC identification measurement purpose.

The parameter "N identify abort" in the IE "DPCH compressed mode info" indicates the maximum number of patterns that the UE shall use to attempt to decode the unknown BSIC of the GSM cell in the initial BSIC identification procedure.

The UE shall be able to measure the "Observed time difference to GSM cell" during a compressed mode pattern sequence configured for this purpose.

The BSIC identification procedure is defined in detail in [19].

14.3.2.3 BSIC re-confirmation

The UE shall perform BSIC re-confirmation in compressed mode pattern sequence specified for BSIC re-confirmation measurement purpose.

The parameter "T reconfirm abort" in the IE "DPCH compressed mode info" indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure.

The UE shall be able to measure the "Observed time difference to GSM cell" during a compressed mode pattern sequence configured for this purpose.

The BSIC re-confirmation procedure is defined in detail in [19].

3GPP TSG-RAN WG2 Meeting #21
Busan, South Korea, 21st–25th May 2001

Tdoc R2-011257

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **779** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	GSM measurements in compressed mode
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	23rd May 2001
Category:	⌘	**A**
Release:	⌘	REL-4

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)

Reason for change: ⌘
- The behaviour of the UE is not fully described when the network does not provide all GSM measurements purposes in parallel.
- Procedual description of inter-RAT measurements and reporting is not consistent in Section 8.6.7.5, Section 8.6.7.6 and in the IE "Inter-RAT measured results list".

Summary of change: ⌘
- Reference to TS25.133 is included into Section 8.6.7.5 in order to ensure that TS25.331 and TS25.133 are aligned.
- UE behaviour in case the BSIC of a GSM cell is not verified, although BSIC verification is required, is corrected to correspond the text in Section 8.6.7.6 and that the IE "Inter-RAT measured results list".
- The UE behaviour is described also in the case the network does not provide all GSM compressed mode pattern sequences in parallel.
- Reference to TS25.133 is included into BSIC identification and re-confirmation sections (14.3.2.2 and 14.3.2.3 respectively) in order to ensure that all UE performs BSIC verification on the same manner.

Consequences if not approved: ⌘
- Different terminals may behave differently when performing GSM measurements.
- Contradiction between different sections of TS25.331
- BSIC verification procedure defined in TS25.133 is not fully taken into account in the behaviour of UE

Clauses affected: ⌘ 8.6.7.5, 8.6.7.6, 14.3.2.2, 14.3.2.3

Other specs affected: ⌘
- ☐ Other core specifications ⌘
- ☐ Test specifications
- ☐ 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.

8.6.7.5 Inter-RAT measurement quantity

If the IE "Inter-RAT measurement quantity" is received in a MEASUREMENT CONTROL message and CHOICE system is GSM, the UE shall:

- if IE "BSIC verification required" is set to "required", for cells that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", and that has a "verified" BSIC:
  - report measurement quantities according to IE "inter-RAT reporting quantity" taking into account the restrictions defined in Section 8.6.7.6.;
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria". The UE shall perform event evaluation for event-triggered reporting after BSIC has been verified for a GSM cell as defined in [19]. Periodical reports shall be triggered according to the given "Reporting interval" even if the BSIC of GSM cell has not been verified. Non verfied BSIC shall be indicated for a GSM cell in the "Inter-RAT measured results list" IE as defined in Section 8.6.7.6;
- if IE "BSIC verification required" is set to "not required", for cells that match any of the BCCH ARFCN in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", regardless if the BSIC is "verified" or "non-verified":
  - report measurement quantities according to IE "inter-RAT reporting quantity";
  - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria";
- if the IE "Measurement quantity" is set to "pathloss"; and
- for any inter-RAT cell indicated by the IE "Cells for measurement", the IE "Output power" in the inter-RAT cell info list in the variable CELL_INFO_LIST is not present:
  - set the variable CONFIGURATION_INCOMPETE to TRUE.

NOTE: The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

8.6.7.6 Inter-RAT reporting quantity

If the IE "Inter-RAT reporting quantity" is received by the UE, the UE shall:

- store the content of the IE to the variable MEASUREMENT_IDENTITY.

If the IE "Inter-RAT measurement quantity" is received and CHOICE system is GSM, the UE shall check each quantity in the GSM choice. The UE shall include measured results in MEASUREMENT REPORT as specified in the IE "Inter-RAT reporting quantity" with the following restrictions:

- if the UE has not confirmed the BSIC of the measured cell:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" is active, the UE is not required to include the " inter-RAT cell id ~~BSIC~~" nor "Observed time difference to GSM cell" in the IE "Inter-RAT measured results list~~Measured results~~", when a MEASUREMENT REPORT is triggered.
- if the UE has confirmed the BSIC of the measured cell, then:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" nor "BSIC re-confirmation" is active, the UE is not required to include the " inter-RAT cell id ~~BSIC~~" nor "Observed time difference to GSM cell" in the IE "Inter-RAT measured results list~~Measured results~~", when a MEASUREMENT REPORT is triggered. If no compressed mode pattern sequence with measurement purpose "GSM carrier RSSI measurements" is active, the UE may include "inter-RAT cell id" or "Observed time difference to GSM cell" in MEASUMENT REPORT without "GSM carrier RSSI" even if it is defined in the IE "Inter-RAT reporting quantity".
- if IE "Pathloss" is set to "TRUE":

- include optional IE "Pathloss" with a value set to the measured pathloss to that GSM cell in IE "Inter-RAT measured results list";

- if IE "Observed time difference to GSM cell" is set to "TRUE":
  - include optional IE "Observed time difference to GSM cell" with the value set to the time difference to that GSM cell for the GSM cells that have a BSIC that is "verified", and that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list". Observed time difference to GSM cells with "non-verified" BSIC shall not be included;

- if IE "GSM Carrier RSSI" is set to "TRUE":
  - include optional IE "GSM Carrier RSSI" with a value set to the measured RXLEV to that GSM cell in IE "Inter-RAT measured results list". If no compressed mode pattern sequence specified with measurement purpose "GSM carrier RSSI measurements" is active, the UE is not required to include the "GSM carrier RSSI" in the IE " Inter-RAT measured results list ", when a MEASUREMENT REPORT is triggered;

- if the BSIC of reported GSM cell is "verified":
  - set the CHOICE BSIC to "Verified BSIC" and IE "inter-RAT cell id" to the value that GSM cell had in the IE "Inter-RAT cell info list";

- if the BSIC of reported GSM cell is "non-verified":
  - set the CHOICE BSIC to "Non verified BSIC" and the IE "BCCH ARFCN" to the value of that GSM cells ARFCN;

The requirements for a cell to be considered "verified" or "non-verified" can be found in [19].

***** NEXT MODIFIED SECTIONS *******

14.3.2 GSM measurements in compressed mode

14.3.2.1 GSM RSSI measurements

The UE shall perform GSM RSSI measurements in the gaps of compressed mode pattern sequence specified for GSM RSSI measurement purpose. The UE cannot be required to measure "Observed time difference to GSM" in gaps specified for this purpose.

14.3.2.2 Initial BSIC identification

The UE shall perform Initial BSIC identification in compressed mode pattern sequence specified for Initial BSIC identification measurement purpose.

The parameter "N identify abort" in the IE "DPCH compressed mode info" indicates the maximum number of patterns that the UE shall use to attempt to decode the unknown BSIC of the GSM cell in the initial BSIC identification procedure.

The UE shall be able to measure the "Observed time difference to GSM cell" during a compressed mode pattern sequence configured for this purpose.

The BSIC identification procedure is defined in detail in [19].

14.3.2.3 BSIC re-confirmation

The UE shall perform BSIC re-confirmation in compressed mode pattern sequence specified for BSIC re-confirmation measurement purpose.

The parameter "T reconfirm abort" in the IE "DPCH compressed mode info" indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure.

The UE shall be able to measure the "Observed time difference to GSM cell" during a compressed mode pattern sequence configured for this purpose.

The BSIC re-confirmation procedure is defined in detail in [19].

3GPP TSG-RAN2 Meeting #21
Busan, South Korea, 21st – 25th May 2001

R2-011435

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 780** ⌘ ev **r2** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Correction to Activation Time in Inter-RAT HO Commands
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	14. May 2001
Category:	⌘	**F**
Release:	⌘	R99

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)

Reason for change: ⌘

According to the definition of the IE "Activation time" in section 8.6.3.1, a new configuration should be taken into use at the indicated CFN, relative to the previously used configuration. In case of the HANDOVER TO UTRAN COMMAND message, there is no such previous configuration that could be referred to by using a CFN. The IE "Activation time" can therefore not be used in this message.

If the activation time is needed in inter-RAT handover to UTRAN, it should only be given to the UE with the timing used in the source RAT and should therefore be defined in the corresponding handover messages used in the other RAT.

The allowed interruption time, i.e. the time when the new dedicated channel in UTRAN should be taken into use, is defined in RAN4 specifications.

Backward compatibility: The proposed changes are backward compatible in the ASN.1. A UE, which does not implement this change, will still be able to decode the received handover command. However, such a UE might delay the establishment of the new channel in UTRAN.

Summary of change: ⌘

- UTRAN should not use the activation time in the HANDOVER TO UTRAN COMMAND messages. Therefore it is removed.
- The ASN.1 part has been maintained backward compatible by replacing the activation time with “dummy”.

Consequences if not approved: ⌘

Ambiguities in the specifications and unpredictable UE behaviour. Possible conflict with TSG RAN4 specifications which define the allowed interruption time for inter-RAT handover.

Clauses affected: ⌘ 10.2.12

Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

10.2.12 HANDOVER TO UTRAN COMMAND

This message is sent to the UE via other system to make a handover to UTRAN.

RLC-SAP: N/A (Sent through a different RAT)

Logical channel: N/A (Sent through a different RAT)

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
New U-RNTI	MP		U-RNTI Short 10.3.3.48	
~~Activation time~~	~~MD~~		~~Activation time 10.3.3.1~~	~~Default value is "now~~
Ciphering algorithm	OP		Ciphering algorithm 10.3.3.4	
CHOICE specification mode	MP			
>Complete specification				
UE information elements				
RB information elements				
>>Signalling RB information to setup list	MP	1 to <maxSRBsetup>		For each signalling radio bearer established
>>>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
>>RAB information to setup list	OP	1 to <maxRABsetup>		For each RAB established
>>>RAB information for setup	MP		RAB information for setup 10.3.4.10	
Uplink transport channels				
>>UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.24	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
Downlink transport channels				
>>DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.6	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
Uplink radio resources				
>>Uplink DPCH info	MP		Uplink DPCH info 10.3.6.88	
>>CHOICE *mode*	MP			
>>>FDD				

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>>>CPCH SET Info	OP		CPCH SET Info 10.3.6.13	
Downlink radio resources				
>>>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>>>TDD				(no data)
>>Downlink information common for all radio links	MP		Downlink information common for all radio links 10.3.6.24	
>>Downlink information per radio link	MP	1 to <maxRL>		
>>>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	
>Preconfiguration				
>>CHOICE Preconfiguration mode	MP			
>>>Predefined configuration	MP		Predefined configuration identity 10.3.4.5	
>>>Default configuration				
>>>>Default configuration mode	MP		Enumerated (FDD, TDD)	Indicates whether the FDD or TDD version of the default configuration shall be used
>>>>Default configuration identity	MP		Default configuration identity 10.3.4.0	
>>RAB info	OP		RAB info Post 10.3.4.9	One RAB is established
>>Uplink DPCH info	MP		Uplink DPCH info Post 10.3.6.89	
Downlink radio resources				
>>CHOICE *mode*				
>>>FDD				
>>>>Downlink information common for all radio links			Downlink information common for all radio links Post 10.3.6.25	
>>>TDD				(no data)
>>Downlink information per radio link	MP	1 to <maxRL>		Send downlink information for each radio link to be set-up. In TDD MaxRL is 1.
>>>Downlink information for each radio link	MP		Downlink information for each radio link Post 10.3.6.28	
Frequency info	MP		Frequency info 10.3.6.36	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.39	
CHOICE mode	MP			
>FDD				(no data)
>TDD				
>>Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.59	

```
-- **************************************************
--
-- HANDOVER TO UTRAN COMMAND
--
-- **************************************************


HandoverToUTRANCommand-r3 ::= CHOICE {
    r3                              SEQUENCE {
        handoverToUTRANCommand-r3       HandoverToUTRANCommand-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

HandoverToUTRANCommand-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
    -- Activation time is not used in this version of specification.
        ActivationTimedummy                 ActivationTime                  OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm              OPTIONAL,
    -- Radio bearer IEs
        rab-Info                        RAB-Info-Post,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                srb-InformationSetupList        SRB-InformationSetupList,
                rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
                ul-CommonTransChInfo            UL-CommonTransChInfo,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
                ul-DPCH-Info                    UL-DPCH-Info,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        dl-PDSCH-Information            DL-PDSCH-Information OPTIONAL,
                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation,
                dl-InformationPerRL-List        DL-InformationPerRL-List,
                frequencyInfo                   FrequencyInfo
            },
            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
                    }
                },
                rab-Info                        RAB-Info-Post       OPTIONAL,
```

```
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostFDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL-List        DL-InformationPerRL-ListPostFDD,
                        frequencyInfo                   FrequencyInfoFDD
                    },
                    tdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostTDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL             DL-InformationPerRL-PostTDD,
                        frequencyInfo                   FrequencyInfoTDD,
                        primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                    }

                }
            }
        },
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power
}
```

3GPP TSG-RAN2 Meeting #21
Busan, South Korea, 21st – 25th May 2001

R2-011436

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 781** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Correction to Activation Time in Inter-RAT HO Commands
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI ***Date:*** ⌘ 29. May 2001
Category:	⌘	**A** ***Release:*** ⌘ REL-4

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)

Reason for change:	⌘	According to the definition of the IE "Activation time" in section 8.6.3.1, a new configuration should be taken into use at the indicated CFN, relative to the previously used configuration. In case of the HANDOVER TO UTRAN COMMAND message, there is no such previous configuration that could be referred to by using a CFN. The IE "Activation time" can therefore not be used in this message. If the activation time is needed in inter-RAT handover to UTRAN, it should only be given to the UE with the timing used in the source RAT and should therefore be defined in the corresponding handover messages used in the other RAT. The allowed interruption time, i.e. the time when the new dedicated channel in UTRAN should be taken into use, is defined in RAN4 specifications.
Summary of change:	⌘	- UTRAN should not use the activation time in the HANDOVER TO UTRAN COMMAND messages. Therefore it is removed. - The ASN.1 part has been maintained backward compatible by replacing the activation time with “dummy”.
Consequences if not approved:	⌘	Ambiguities in the specifications and unpredictable UE behaviour. Possible conflict with TSG RAN4 specifications which define the allowed interruption time for inter-RAT handover.

Clauses affected:	⌘	10.2.12		
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	

Other comments: ⌘

10.2.12 HANDOVER TO UTRAN COMMAND

This message is sent to the UE via other system to make a handover to UTRAN.

RLC-SAP: N/A (Sent through a different RAT)

Logical channel: N/A (Sent through a different RAT)

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
New U-RNTI	MP		U-RNTI Short 10.3.3.48	
~~Activation time~~	~~MD~~		~~Activation time 10.3.3.1~~	~~Default value is "now~~
Ciphering algorithm	OP		Ciphering algorithm 10.3.3.4	
CHOICE specification mode	MP			
>Complete specification				
UE information elements				
RB information elements				
>>Signalling RB information to setup list	MP	1 to <maxSRBsetup>		For each signalling radio bearer established
>>>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
>>RAB information to setup list	OP	1 to <maxRABsetup>		For each RAB established
>>>RAB information for setup	MP		RAB information for setup 10.3.4.10	
Uplink transport channels				
>>UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.24	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
Downlink transport channels				
>>DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.6	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
Uplink radio resources				
>>Uplink DPCH info	MP		Uplink DPCH info 10.3.6.88	
>>CHOICE *mode*	MP			
>>>FDD				

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>>>CPCH SET Info	OP		CPCH SET Info 10.3.6.13	
Downlink radio resources				
>>>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>>>TDD				(no data)
>>Downlink information common for all radio links	MP		Downlink information common for all radio links 10.3.6.24	
>>Downlink information per radio link	MP	1 to <maxRL>		
>>>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	
>Preconfiguration				
>>CHOICE Preconfiguration mode	MP			
>>>Predefined configuration	MP		Predefined configuration identity 10.3.4.5	
>>>Default configuration				
>>>>Default configuration mode	MP		Enumerated (FDD, TDD)	Indicates whether the FDD or TDD version of the default configuration shall be used
>>>>Default configuration identity	MP		Default configuration identity 10.3.4.0	
>>RAB info	OP		RAB info Post 10.3.4.9	One RAB is established
>>Uplink DPCH info	MP		Uplink DPCH info Post 10.3.6.89	
Downlink radio resources				
>>CHOICE *mode*				
>>>FDD				
>>>>Downlink information common for all radio links			Downlink information common for all radio links Post 10.3.6.25	
>>>TDD				(no data)
>>Downlink information per radio link	MP	1 to <maxRL>		Send downlink information for each radio link to be set-up. In TDD MaxRL is 1.
>>>Downlink information for each radio link	MP		Downlink information for each radio link Post 10.3.6.28	
Frequency info	MP		Frequency info 10.3.6.36	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.39	
CHOICE mode	MP			
>FDD				(no data)
>TDD				
>>Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.59	

```
-- **************************************************
--
-- HANDOVER TO UTRAN COMMAND
--
-- **************************************************


HandoverToUTRANCommand-r3 ::= CHOICE {
    r3                              SEQUENCE {
        handoverToUTRANCommand-r3       HandoverToUTRANCommand-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

HandoverToUTRANCommand-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        ActivationTimedummy                 ActivationTime                      OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
        rab-Info                        RAB-Info-Post,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                srb-InformationSetupList        SRB-InformationSetupList,
                rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
                ul-CommonTransChInfo            UL-CommonTransChInfo,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
                ul-DPCH-Info                    UL-DPCH-Info,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        dl-PDSCH-Information            DL-PDSCH-Information OPTIONAL,
                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation,
                dl-InformationPerRL-List        DL-InformationPerRL-List,
                frequencyInfo                   FrequencyInfo
            },
            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
                    }
                },
                rab-Info                        RAB-Info-Post       OPTIONAL,
                modeSpecificInfo                CHOICE {
```

```
                    fdd                             SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostFDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL-List        DL-InformationPerRL-ListPostFDD,
                        frequencyInfo                   FrequencyInfoFDD
                    },
                    tdd                                 SEQUENCE {
                        ul-DPCH-Info                    UL-DPCH-InfoPostTDD,
                        dl-CommonInformationPost        DL-CommonInformationPost,
                        dl-InformationPerRL             DL-InformationPerRL-PostTDD,
                        frequencyInfo                   FrequencyInfoTDD,
                        primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                    }

                }
            }
        },
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power
}
```