TSG-RAN Meeting #13 *RP-010547*
Beijing, China, 18 - 21 September 2001

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

Source: **TSG-RAN WG2**

Agenda item: **8.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-011899	agreed	25.331	0985		R99	Lossless Criteria in PDCP Info	F	3.7.0	3.8.0
R2-012040	agreed	25.331	0986		Rel-4	Lossless Criteria in PDCP Info	A	4.1.0	4.2.0
R2-011904	agreed	25.331	0987		R99	Corrections to cell reselection parameter values	F	3.7.0	3.8.0
R2-012096	agreed	25.331	0988		Rel-4	Corrections to cell reselection parameter values	A	4.1.0	4.2.0
R2-012097	agreed	25.331	0989	1	R99	Correction to signalling connection release	F	3.7.0	3.8.0
R2-012098	agreed	25.331	0990		Rel-4	Correction to signalling connection release	A	4.1.0	4.2.0
R2-012099	agreed	25.331	0991	1	R99	Corrections to cell update procedures	F	3.7.0	3.8.0
R2-012100	agreed	25.331	0992		Rel-4	Corrections to cell update procedures	A	4.1.0	4.2.0
R2-011907	agreed	25.331	0993		R99	PDCP configuration and PS domain configuration checks	F	3.7.0	3.8.0
R2-012015	agreed	25.331	0994		Rel-4	PDCP configuration and PS domain configuration checks	A	4.1.0	4.2.0
R2-012140	agreed	25.331	0995	1	R99	Correction to handling of RRC transaction identifier for Cell Update, URA Update and RRC connection setup	F	3.7.0	3.8.0
R2-012183	agreed	25.331	0996		Rel-4	Correction to handling of RRC transaction identifier for Cell Update, URA Update and RRC connection setup	A	4.1.0	4.2.0
R2-012201	agreed	25.331	0997	2	R99	Correction of UE capabilities regarding Rx-Tx time difference type 2 measurement	F	3.7.0	3.8.0
R2-012202	agreed	25.331	0998	1	Rel-4	Correction of UE capabilities regarding Rx-Tx time difference type 2 measurement	A	4.1.0	4.2.0
R2-011910	agreed	25.331	0999		R99	Correction to handling of IE ’Downlink info for each radio link’	F	3.7.0	3.8.0
R2-012141	agreed	25.331	1000		Rel-4	Correction to handling of IE ’Downlink info for each radio link’	A	4.1.0	4.2.0
R2-011916	agreed	25.331	1003		R99	Redundant IE in Traffic volume measurement system information	F	3.7.0	3.8.0
R2-012068	agreed	25.331	1004		Rel-4	Redundant IE in Traffic volume measurement system information	A	4.1.0	4.2.0
R2-011917	agreed	25.331	1005		R99	Editorial corrections	F	3.7.0	3.8.0
R2-012107	agreed	25.331	1006		Rel-4	Editorial corrections	A	4.1.0	4.2.0

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27 - 31 Aug. 2001

Tdoc R2-011899

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 985** ⌘ rev **-** ⌘ Current version: **3.7.0** ⌘

*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:	⌘	Lossless Criteria in PDCP Info
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	23 August 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:	⌘	On RAN WG 2 meeting #22 it was decided to forbid the configuration combination "RLC SDU discard" in RLC and "Support for lossless SRNS relocation" in PDCP.
Summary of change:	⌘	The "Lossless Criteria" in PDCP Info is changed
Consequences if not approved:	⌘	The lossless SRNS reloaction may not work proparly for certain configuration. **Isolated Impact Analysis** Corrected funtionality: Lossless SRNS relocation. Correction to a function where the specification was missing procedural rules. Would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected behaviour otherwise.

Clauses affected:	⌘	10.3.4.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.323 25.331 v4.1.0, CR 986
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.

10.3.4.2 PDCP info

The purpose of the PDCP info IE is to indicate which algorithms shall be established and to configure the parameters of each of the algorithms.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Support for lossless SRNS relocation	CV-*LosslessCriteria*		Boolean	TRUE means support
Max PDCP SN window size	CV-*Lossless*		Enumerated(sn255, sn65535)	Maximum PDCP sequence number window size. The handling of sequence number when the Max PDCP SN window size is 255 is specified in [23].
PDCP PDU header	MD		Enumerated (present, absent)	Whether a PDCP PDU header is existent or not. Default value is "present"
Header compression information	OP	1 to <maxPDCPAlgoType>		
>CHOICE *algorithm type*	MP			
>>RFC2507				Header compression according to IETF standard RFC2507
>>>F_MAX_PERIOD	MD		Integer (1..65535)	Largest number of compressed non-TCP headers that may be sent without sending a full header. Default value is 256.
>>>F_MAX_TIME	MD		Integer (1..255)	Compressed headers may not be sent more than F_MAX_TIME seconds after sending last full header. Default value is 5.
>>>MAX_HEADER	MD		Integer (60..65535)	The largest header size in octets that may be compressed. Default value is 168.
>>>TCP_SPACE	MD		Integer (3..255)	Maximum CID value for TCP connections. Default value is 15.
>>>NON_TCP_SPACE	MD		Integer (3..65535)	Maximum CID value for non-TCP connections. Default value is 15.
>>>EXPECT_REORDERING	MD		Enumerated (reordering not expected, reordering expected)	Whether the algorithm shall reorder PDCP SDUs or not. Default value is "reordering not expected".

Condition	Explanation
LosslessCriteria	This IE is present only if the IE "RLC mode" is "Acknowledged", ~~and~~ the IE "In-sequence delivery " is "True" and the IE “SDU Discard Mode” is “No discard”.
Lossless	This IE shall be present if the IE "Support for lossless SRNS relocation" Is TRUE, otherwise it shall be absent.

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27 - 31 Aug. 2001

Tdoc R2-012040

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 986** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

*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:	⌘	Lossless Criteria in PDCP Info
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	27 August 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:	⌘	Shadow CR to CR 986 R99. On RAN WG 2 meeting #22 it was decided to forbid the configuration combination “RLC SDU discard” in RLC and “Support for lossless SRNS relocation” in PDCP.
Summary of change:	⌘	The “Lossless Criteria” in PDCP Info is changed
Consequences if not approved:	⌘	The lossless SRNS reloaction may not work proparly for certain configuration.

Clauses affected:	⌘	10.3.4.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.323 25.331 v3.7.0, CR 985
Other comments:	⌘			

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10.3.4.2 PDCP info

The purpose of the PDCP info IE is to indicate which algorithms shall be established and to configure the parameters of each of the algorithms.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Support for lossless SRNS relocation	CV-*LosslessCriteria*		Boolean	TRUE means support
Max PDCP SN window size	CV-*Lossless*		Enumerated(sn255, sn65535)	Maximum PDCP sequence number window size. The handling of sequence number when the Max PDCP SN window size is 255 is specified in [23].
PDCP PDU header	MD		Enumerated (present, absent)	Whether a PDCP PDU header is existent or not. Default value is "present"
Header compression information	OP	1 to <maxPDCPAlgoType>		
>CHOICE *algorithm type*	MP			
>>RFC2507				Header compression according to IETF standard RFC2507
>>>F_MAX_PERIOD	MD		Integer (1..65535)	Largest number of compressed non-TCP headers that may be sent without sending a full header. Default value is 256.
>>>F_MAX_TIME	MD		Integer (1..255)	Compressed headers may not be sent more than F_MAX_TIME seconds after sending last full header. Default value is 5.
>>>MAX_HEADER	MD		Integer (60..65535)	The largest header size in octets that may be compressed. Default value is 168.
>>>TCP_SPACE	MD		Integer (3..255)	Maximum CID value for TCP connections. Default value is 15.
>>>NON_TCP_SPACE	MD		Integer (3..65535)	Maximum CID value for non-TCP connections. Default value is 15.
>>>EXPECT_REORDERING	MD		Enumerated (reordering not expected, reordering expected)	Whether the algorithm shall reorder PDCP SDUs or not. Default value is "reordering not expected".

Condition	Explanation
LosslessCriteria	This IE is present only if the IE "RLC mode" is "Acknowledged", ~~and~~ the IE "In-sequence delivery " is "True" and the IE “SDU Discard Mode” is “No discard”.
Lossless	This IE shall be present if the IE "Support for lossless SRNS relocation" Is TRUE, otherwise it shall be absent.

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Helsinki, Finland, 27th-31st August 2001

Tdoc r2-011904

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **987** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

*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 cell reselection parameter values
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	10/08/2001
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: ⌘

1 - The parameter ranges of (10, 20, 30, 40, 50, 60, 70, inf) defined for Temporary Offset1 and Temporary Offset2 mean that the temporal offset mechanism defined in 25.304 can does not function as intented.

2 - Units of Tbarred are not defined in the the tabular description.

3 - The tabular description contains some references to GSM RXLEV in the system information used for cell reslection. GSM RXLEV as. These references should be to RSSI values in dBm and not RXLEV which is defined in 05.08 is a value mapped from dBm.

4 - The parameters Sintrasearch, Sintersearch, SsearchRAT, SlimitsearchRAT have a range -32..20, and the parameters SsearchHCS and ShcsRAT have a range -105..91. In both cases the negative values are meaningless as a S criteria of a cell must be greater than 0 to be suitable.

5 - The IE 'Cell selection and reselection quality measure' is duplicated in system information (on SIB3/4 and SIB11/12). These parameters should be set identically by the network but in situation that they are set differently the UE behaviour needs to be specified.

Summary of change: ⌘

1 - The parameter ranges are corrected to more appropriate values so that the temporal offset mechanism works correctly. The range of Temporary Offset1, which is applied to RSCP values, is changed to (3, 6, 9, 12, 15, 18, 21, inf) and Temporary Offset2, which is appied to Ec/Io values, is changed to (2, 3, 4, 6, 8, 10, 12, inf).

2 - Units of seconds added to Tbarred

3 - References to RXLEV correct to GSM RSSI

4 - In the tabular format where Sintrasearch, Sintersearch, SsearchRAT,

		SlimitsearchRAT, SsearchHCS and ShcsRAT are defined, text is added to the semantic column to indicate that negative values have no meaning and that any negative value received by the UE is interpretted as 0. 5 - It is specified that if the two instances of the IE 'Cell selection and reselection quality measure' are set to different values by the network the UE shall use the value contained in SIB311/12. A note is added to the tabular description to indicate that there is duplication. **Isolated impact analysis:** Corrected Functionality: Broadcast of parameters for cell reselection. 1 - Correction to a function that was erroneous in release 99. The correction has isolated impact. The effect of a June 01 terminal reading IEs that are broadcast according to this change is that they will apply a larger than expected temporal offset and the neighbour cell is likely to be completely excluded from reselection until after the penalty timer has expired. 2, 3, 4, 5 - Correction to a function where the specification is ambibuous or not sufficiently explicit. Would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected functionility otherwise.
Consequences if not approved:	⌘	1 - The temporal offset functionality will not work correctly. 2,3 - The specification will remain ambiguous or insuffieciently explicit.

Clauses affected:	⌘	8.1.1.6.11, 8.1.1.6.12, 10.3.2.1, 10.3.2.3, 10.3.2.4, 10.3.7.10, 10.3.7.54a, 11.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v4.1.0, CR 988
Other comments:	⌘			

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8.1.1.6.11 System Information Block type 11

The UE should store all relevant IEs included in this system information block. The UE shall:

- if in connected mode, and System Information Block type 12 is indicated as used in the cell:
  - read and act on information sent in System Information Block type 12;
- for each measurement type:
  - start a measurement using the set of IEs specified for that measurement type;
- associate each measurement with the identity number given by the IE "Measurement identity";
- clear the variable CELL_INFO_LIST;
- act upon the received IE "Intra-frequency/Inter-frequency/Inter-RAT cell info list" as described in subclause 8.6.7.3;
- if included, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL_DCH is entered;
- If IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Intra-frequency cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Intra-frequency cell info list", for that cell use the same parameter values as used for the preceding IE "Intra-frequency cell info list";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-frequency cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-frequency cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-frequency cell info list";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-RAT Cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-RAT cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-RAT cell info list";
- If IE "FACH measurement occasion info" is included:
  - act as specified in subclause 8.6.7
- else:
  - may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- if the value of the IE 'Cell selection and reselection quality measure' is different from the value of the IE 'Cell selection and reselection quality measure' obtained from System Information Block 3 or System Information Block 4:
  - use the value of the IE from this System Information Block and ignore the value obtained from System Information Block 3 or System Information Block 4.

8.1.1.6.12 System Information Block type 12

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- for each measurement type:
  - start (or continue) a measurement using the set of IEs specified for that measurement type;

- act upon the received IE "Intra-frequency/Inter-frequency/Inter-RAT cell info list" as described in subclause 8.6.7.3;
- if any of the IEs "Intra-frequency measurement quantity", "Intra-frequency reporting quantity for RACH reporting", "Maximum number of reported cells on RACH" or "Reporting information for state CELL_DCH" are not included in the system information block, read the corresponding IE(s) in system information block type 11 and use that information for the intra-frequency measurement;
- if included in this system information block or in System Information Block type11, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL_DCH is entered;
- if the IE "Inter-frequency measurement quantity" is not included in the system information block, read the corresponding IE in System Information Block type 11 and use that information for the inter-frequency measurement;
- if the IE "Inter-RAT measurement quantity" is not included in the system information block, read the corresponding IE in System Information Block type 11 and use that information for the inter-RAT measurement;
- if in state CELL_FACH, start traffic volume measurement reporting as specified in the IE "Traffic volume reporting quantity";
- associate each measurement with the identity number given by the IE "Measurement identity";
- If IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Intra-frequency cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Intra-frequency cell info list", for that cell use the same parameter values as used for the preceding IE "Intra-frequency cell info list";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-frequency cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-frequency cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-frequency cell info list";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-RAT cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-RAT cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-RAT cell info list".
- If IE "FACH measurement occasion info" is included:
  - act as specified in subclause 8.6.7
- else:
  - perform neither inter-frequency/inter-RAT measurements nor inter-frequency/inter-RAT cell re-selection evaluation, independent of UE measurement capabilities.
- if the value of the IE 'Cell selection and reselection quality measure' is different from the value of the IE 'Cell selection and reselection quality measure' obtained from System Information Block 3 or System Information Block 4:
  - use the value of the IE from this System Information Block and ignore the value obtained from System Information Block 3 or System Information Block 4.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

10.3.2.3 Cell selection and re-selection info for SIB3/4

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Mapping Info	OP		Mapping info 10.3.2.5	This IE should not be sent.
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 for FDD cells. This IE is also sent to the UE in SIB11/12. Both occurances of the IE should be set to the same value.
CHOICE *mode*	MP			
>FDD				
>>$S_{intrasearch}$	OP		Integer (-32..20 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>$S_{intersearch}$	OP		Integer (-32..20 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>$S_{searchHCS}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>RAT List	OP	1 to <maxOtherRAT>		
>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	
>>>$S_{search,RAT}$	MP		Integer (-32..20 by step of 2)	In case the value 20 is received the UE shall consider this IE as if it was absent according to [4]. If a negative value is received the UE shall consider the value to be 0. [dB]
>>>$S_{HCS,RAT}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>>$S_{limit,SearchRAT}$	OP		Integer (-32..20 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>Qqualmin	MP		Integer (-24..0)	Ec/N0, [dB]
>>Qrxlevmin	MP		Integer (-115..-25 by step of 2)	RSCP, [dBm]
>TDD				
>>$S_{intrasearch}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>$S_{intersearch}$	OP		Integer (-	If a negative value is received

			105..91 by step of 2)	the UE shall consider the value to be 0. [4] [dB]
>>$S_{searchHCS}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>RAT List	OP	1 to <maxOtherRAT>		
>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	
>>>$S_{search,RAT}$	MP		Integer (-105..91 by step of 2)	In case the value 91 is received the UE shall consider this IE as if it was absent according to [4] If a negative value is received the UE shall consider the value to be 0. [dB]
>>>$S_{HCS,RAT}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>>$S_{limit,SearchRAT}$	MP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>Qrxlevmin	MP		Integer (-115..-25 by step of 2)	RSCP, [dBm]
$Qhyst1_s$	MP		Integer (0..40 by step of 2)	[4] [dB]
$Qhyst2_s$	CV-*FDD-Quality-Measure*		Integer (0..40 by step of 2)	Default value is $Qhyst1_s$ [4] [dB]
$Treselection_s$	MP		Integer (0..31)	[s]
HCS Serving cell Information	OP		HCS Serving cell information 10.3.7.12	
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.39	[dBm] UE_TXPWR_MAX_RACH in [4].

Condition	Explanation
FDD-Quality-Measure	Presence is not allowed if the IE "Cell_selection_and_reselection_quality_measure" has the value CPICH RSCP, otherwise the IE is mandatory and has a default value.

10.3.2.4 Cell selection and re-selection info for SIB11/12

Information Element/Group name	Need	Multi	Type and reference	Semantics description
$Qoffset1_{s,n}$	MD		Integer(-50..50)	Default value is 0. [dB]
$Qoffset2_{s,n}$	CV-*FDD-Quality-Measure*		Integer(-50..50)	Default value is 0. [dB]
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	[dBm] UE_TXPWR_MAX_RACH in [4]. Default is the Maximum allowed UL TX power for the serving cell
HCS neighbouring cell information	OP		HCS Neighbouring cell information 10.3.7.11	
CHOICE *mode*	MP			
>FDD				
>>Qqualmin	MD		Integer (-24..0)	Ec/N0, [dB] Default value is Qqualmin for the serving cell
>>Qrxlevmin	MD		Integer (-115..-25 by step of 2)	RSCP, [dBm] Default value is Qrxlevmin for the serving cell
>TDD				
>>Qrxlevmin	MD		Integer (-115..-25 by step of 2)	RSCP, [dBm] Default value is Qrxlevmin for the serving cell
>GSM				
>>Qrxlevmin	MD		Integer (-115..-25 by step of 2)	~~RXLEV~~GSM RSSI, [dBm] Default value is Qrxlevmin for the serving cell

Condition	Explanation
FDD-Quality-Measure	This IE is mandatory and has a default value for Intra/Inter Frequency Cells if the IE "Cell_selection_and_reselection_quality_measure" has the value CPICH Ec/No. Otherwise the IE is Optional

10.3.2.1 Cell Access Restriction

Indicates the restrictions to cell access.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell Barred	MP		Enumerated(not barred, barred)	
Intra-frequency cell re-selection indicator	CV-*Barred*		Enumerated(not allowed, allowed)	
T_{barred}	CV-*Barred*		Integer (10,20,40,80 ,160,320,640 ,1280)	[4] [s]
Cell Reserved for operator use	MP		Enumerated(reserved, not reserved)	
Cell Reservation Extension	MP		Enumerated(reserved, not reserved)	
Access Class Barred list	MD	maxAC		Default is no access class barred is applied. The first instance of the parameter corresponds to Access Class 0, the second to Access Class 1 and so on up to Access Class 15. UE reads this IE of its access class stored in SIM.
>Access Class Barred	MP		Enumerated(not barred, barred)	

Condition	Explanation
Barred	Presence is mandatory if the IE "Cell Barred" has the value "Barred"; otherwise the element is not needed in the message.

10.3.7.10 HCS Cell re-selection information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Penalty_time	MD		Integer(0, 10, 20, 30, 40, 50, 60)	Default value is 0 which means = not used In seconds
Temporary_offsets	CV-*Penalty used*			
>Temporary_offset1	MP		Integer(~~10, 20, 30, 40, 50, 60, 70, infinity~~3, 6, 9, 12, 15, 18, 21, inf)	[dB]
>Temporary_offset2	CV-*FDD-Quality-Measure*		Integer(~~10, 20, 30, 40, 50, 60, 70, infinity~~2, 3, 4, 6, 8, 10, 12, inf)	[dB]

Condition	Explanation
Penalty used	Not allowed if IE Penalty time equals 'not used' else MP
FDD-Quality-Measure	Presence is not allowed if the IE "Cell_selection_and_reselection_quality_measure" has the value CPICH RSCP, otherwise the IE is mandatory. This conditional presence is implemented in ASN.1 by the use of a specific RSCP and EcN0 variant of 10.3.7.10.

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	

10.3.7.54a Qhcs

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Qhcs	MP		Integer(0..99)	Qhcs, mapped from CPICH Ec/No (FDD), see [4] [dB] 0: -24 1: -23.5 2: -23 3: -22.5 ... 45: -1.5 46: -1 47: -0.5 48: 0 49: (spare) ... 98: (spare) 99: (spare)
				Qhcs, mapped from CPICH RSCP (FDD), see [4] [dBm] 0: -115 1: -114 2: -113 : 88: -27 89: -26 90: -(spare) 91: -(spare) : 98: -(spare) 99: -(spare)
				Qhcs, mapped from PCCPCH RSCP (TDD), see [4] [dBm] 0: -115 1: -114 2: -113 : 88: -27 89: -26 90: -(spare) 91: -(spare) : 98: -(spare) 99: -(spare)

				Qhcs level, mapped from Averaged received signal level ~~RXLEV~~ RSSI (GSM), see [4] [dBm] 0: -110 1: -109 2: -108 : 61: -49 62: -48 63: -47 64: -46 65: -45 66: -44 67: -43 68: -42 69: -41 70: -40 71: -39 72: -38 73: -37 74: -(spare) : 98: -(spare) 99: -(spare)

11.3 Information element definitions

```
PenaltyTime-RSCP ::=                CHOICE {
    notUsed                             NULL,
    pt10                                TemporaryOffset1,
    pt20                                TemporaryOffset1,
    pt30                                TemporaryOffset1,
    pt40                                TemporaryOffset1,
    pt50                                TemporaryOffset1,
    pt60                                TemporaryOffset1
}



TemporaryOffset1 ::=                    ENUMERATED {
                                        to10to3, to20to6, to30to9, to40to12, to50to15,
                                        to60to18, to70to21, infinite }

TemporaryOffset2 ::=                ENUMERATED {
                                        to2, to3, to4, to6, to8,
                                        to10, to12, infinite }

TemporaryOffsetList ::=             SEQUENCE    {
        temporaryOffset1                TemporaryOffset1,
        temporaryOffset2                TemporaryOffset2
}
```

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th-31st August 2001

Tdoc r2-012096

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **988** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

*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 cell reselection parameter values
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	10/08/2001
Category:	⌘	**A**
Release:	⌘	REL4

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: ⌘

1 - The parameter ranges of (10, 20, 30, 40, 50, 60, 70, inf) defined for Temporary Offset1 and Temporary Offset2 mean that the temporal offset mechanism defined in 25.304 can does not function as intented.

2 - Units of Tbarred are not defined in the the tabular description.

3 - The tabular description contains some references to GSM RXLEV in the system information used for cell reslection. GSM RXLEV as. These references should be to RSSI values in dBm and not RXLEV which is defined in 05.08 is a value mapped from dBm.

4 - The parameters Sintrasearch, Sintersearch, SsearchRAT, SlimitsearchRAT have a range -32..20, and the parameters SsearchHCS and ShcsRAT have a range -105..91. In both cases the negative values are meaningless as a S criteria of a cell must be greater than 0 to be suitable.

5 - The IE 'Cell selection and reselection quality measure' is duplicated in system information (on SIB3/4 and SIB11/12). These parameters should be set identically by the network but in situation that they are set differently the UE behaviour needs to be specified.

Summary of change: ⌘

1 - The parameter ranges are corrected to more appropriate values so that the temporal offset mechanism works correctly. The range of Temporary Offset1, which is applied to RSCP values, is changed to (3, 6, 9, 12, 15, 18, 21, inf) and Temporary Offset2, which is appied to Ec/Io values, is changed to (2, 3, 4, 6, 8, 10, 12, inf).

2 - Units of seconds added to Tbarred

3 - References to RXLEV correct to GSM RSSI

4 - In the tabular format where Sintrasearch, Sintersearch, SsearchRAT,

		SlimitsearchRAT, SsearchHCS and ShcsRAT are defined, text is added to the semantic column to indicate that negative values have no meaning and that any negative value received by the UE is interpretted as 0. 5 - It is specified that if the two instances of the IE 'Cell selection and reselection quality measure' are set to different values by the network the UE shall use the value contained in SIB311/12. A note is added to the tabular description to indicate that there is duplication. **Isolated impact analysis:** Corrected Functionality: Broadcast of parameters for cell reselection. 1 - Correction to a function that was erroneous in release 99. The correction has isolated impact. The effect of a June 01 terminal reading IEs that are broadcast according to this change is that they will apply a larger than expected temporal offset and the neighbour cell is likely to be completely excluded from reselection until after the penalty timer has expired. 2, 3, 4, 5 - Correction to a function where the specification is ambibuous or not sufficiently explicit. Would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected functionility otherwise.
Consequences if not approved:	⌘	1 - The temporal offset functionality will not work correctly. 2,3 - The specification will remain ambiguous or insuffieciently explicit.

Clauses affected:	⌘	8.1.1.6.11, 8.1.1.6.12, 10.3.2.1, 10.3.2.3, 10.3.2.4, 10.3.7.10, 10.3.7.54a, 11.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v3.7.0, CR 987
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. ⌘

8.1.1.6.11 System Information Block type 11

The UE should store all relevant IEs included in this system information block. The UE shall:

- if in connected mode, and System Information Block type 12 is indicated as used in the cell:
  - read and act on information sent in System Information Block type 12;
- for each measurement type:
  - start a measurement using the set of IEs specified for that measurement type;
- associate each measurement with the identity number given by the IE "Measurement identity";
- clear the variable CELL_INFO_LIST;
- act upon the received IE "Intra-frequency/Inter-frequency/Inter-RAT cell info list" as described in subclause 8.6.7.3;
- if included, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL_DCH is entered;
- If IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Intra-frequency cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Intra-frequency cell info list", for that cell use the same parameter values as used for the preceding IE "Intra-frequency cell info list";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-frequency cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-frequency cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-frequency cell info list";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-RAT Cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-RAT cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-RAT cell info list";
- If IE "FACH measurement occasion info" is included:
  - act as specified in subclause 8.6.7
- else:
  - may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- if the value of the IE 'Cell selection and reselection quality measure' is different from the value of the IE 'Cell selection and reselection quality measure' obtained from System Information Block 3 or System Information Block 4:
  - use the value of the IE from this System Information Block and ignore the value obtained from System Information Block 3 or System Information Block 4.

8.1.1.6.12 System Information Block type 12

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- for each measurement type:
  - start (or continue) a measurement using the set of IEs specified for that measurement type;

- act upon the received IE "Intra-frequency/Inter-frequency/Inter-RAT cell info list" as described in subclause 8.6.7.3;
- if any of the IEs "Intra-frequency measurement quantity", "Intra-frequency reporting quantity for RACH reporting", "Maximum number of reported cells on RACH" or "Reporting information for state CELL_DCH" are not included in the system information block, read the corresponding IE(s) in system information block type 11 and use that information for the intra-frequency measurement;
- if included in this system information block or in System Information Block type11, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL_DCH is entered;
- if the IE "Inter-frequency measurement quantity" is not included in the system information block, read the corresponding IE in System Information Block type 11 and use that information for the inter-frequency measurement;
- if the IE "Inter-RAT measurement quantity" is not included in the system information block, read the corresponding IE in System Information Block type 11 and use that information for the inter-RAT measurement;
- if in state CELL_FACH, start traffic volume measurement reporting as specified in the IE "Traffic volume reporting quantity";
- associate each measurement with the identity number given by the IE "Measurement identity";
- If IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Intra-frequency cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Intra-frequency cell info list", for that cell use the same parameter values as used for the preceding IE "Intra-frequency cell info list";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-frequency cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-frequency cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-frequency cell info list";
  - If IE "HCS neighbouring cell information" is not included in the first occurrence of IE "Inter-RAT cell info list", use the default values specified for the IE "HCS neighbouring cell information" for that cell;
  - If IE "HCS neighbouring cell information" is not included in other occurrence of IE "Inter-RAT cell info list", for that cell use the same parameter values as used for the preceding IE "Inter-RAT cell info list".
- If IE "FACH measurement occasion info" is included:
  - act as specified in subclause 8.6.7
- else:
  - perform neither inter-frequency/inter-RAT measurements nor inter-frequency/inter-RAT cell re-selection evaluation, independent of UE measurement capabilities.
- if the value of the IE 'Cell selection and reselection quality measure' is different from the value of the IE 'Cell selection and reselection quality measure' obtained from System Information Block 3 or System Information Block 4:
  - use the value of the IE from this System Information Block and ignore the value obtained from System Information Block 3 or System Information Block 4.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

10.3.2.3 Cell selection and re-selection info for SIB3/4

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Mapping Info	OP		Mapping info 10.3.2.5	This IE should not be sent.
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 for FDD cells. This IE is also sent to the UE in SIB11/12. Both occurances of the IE should be set to the same value.
CHOICE *mode*	MP			
>FDD				
>>$S_{intrasearch}$	OP		Integer (-32..20 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>$S_{intersearch}$	OP		Integer (-32..20 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>$S_{searchHCS}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>RAT List	OP	1 to <maxOtherRAT>		
>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	
>>>$S_{search,RAT}$	MP		Integer (-32..20 by step of 2)	In case the value 20 is received the UE shall consider this IE as if it was absent according to [4]. If a negative value is received the UE shall consider the value to be 0. [dB]
>>>$S_{HCS,RAT}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>>$S_{limit,SearchRAT}$	OP		Integer (-32..20 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>Qqualmin	MP		Integer (-24..0)	Ec/N0, [dB]
>>Qrxlevmin	MP		Integer (-115..-25 by step of 2)	RSCP, [dBm]
>TDD				
>>$S_{intrasearch}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>$S_{intersearch}$	OP		Integer (-	If a negative value is received

			105..91 by step of 2)	the UE shall consider the value to be 0. [4] [dB]
>>$S_{searchHCS}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>RAT List	OP	1 to <maxOtherRAT>		
>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	
>>>$S_{search,RAT}$	MP		Integer (-105..91 by step of 2)	In case the value 91 is received the UE shall consider this IE as if it was absent according to [4] If a negative value is received the UE shall consider the value to be 0. [dB]
>>>$S_{HCS,RAT}$	OP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>>$S_{limit,SearchRAT}$	MP		Integer (-105..91 by step of 2)	If a negative value is received the UE shall consider the value to be 0. [4] [dB]
>>Qrxlevmin	MP		Integer (-115..-25 by step of 2)	RSCP, [dBm]
$Qhyst1_s$	MP		Integer (0..40 by step of 2)	[4] [dB]
$Qhyst2_s$	CV-*FDD-Quality-Measure*		Integer (0..40 by step of 2)	Default value is $Qhyst1_s$ [4] [dB]
$Treselection_s$	MP		Integer (0..31)	[s]
HCS Serving cell Information	OP		HCS Serving cell information 10.3.7.12	
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.39	[dBm] UE_TXPWR_MAX_RACH in [4].

Condition	Explanation
FDD-Quality-Measure	Presence is not allowed if the IE "Cell_selection_and_reselection_quality_measure" has the value CPICH RSCP, otherwise the IE is mandatory and has a default value.

10.3.2.4 Cell selection and re-selection info for SIB11/12

Information Element/Group name	Need	Multi	Type and reference	Semantics description
$Qoffset1_{s,n}$	MD		Integer(-50..50)	Default value is 0. [dB]
$Qoffset2_{s,n}$	CV-*FDD-Quality-Measure*		Integer(-50..50)	Default value is 0. [dB]
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	[dBm] UE_TXPWR_MAX_RACH in [4]. Default is the Maximum allowed UL TX power for the serving cell
HCS neighbouring cell information	OP		HCS Neighbouring cell information 10.3.7.11	
CHOICE *mode*	MP			
>FDD				
>>Qqualmin	MD		Integer (-24..0)	Ec/N0, [dB] Default value is Qqualmin for the serving cell
>>Qrxlevmin	MD		Integer (-115..-25 by step of 2)	RSCP, [dBm] Default value is Qrxlevmin for the serving cell
>TDD				
>>Qrxlevmin	MD		Integer (-115..-25 by step of 2)	RSCP, [dBm] Default value is Qrxlevmin for the serving cell
>GSM				
>>Qrxlevmin	MD		Integer (-115..-25 by step of 2)	~~RXLEV~~GSM RSSI, [dBm] Default value is Qrxlevmin for the serving cell

Condition	Explanation
FDD-Quality-Measure	This IE is mandatory and has a default value for Intra/Inter Frequency Cells if the IE "Cell_selection_and_reselection_quality_measure" has the value CPICH Ec/No. Otherwise the IE is Optional

10.3.2.1 Cell Access Restriction

Indicates the restrictions to cell access.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell Barred	MP		Enumerated(not barred, barred)	
Intra-frequency cell re-selection indicator	CV-*Barred*		Enumerated(not allowed, allowed)	
T_{barred}	CV-*Barred*		Integer (10,20,40,80 ,160,320,640 ,1280)	[4] [s]
Cell Reserved for operator use	MP		Enumerated(reserved, not reserved)	
Cell Reservation Extension	MP		Enumerated(reserved, not reserved)	
Access Class Barred list	MD	maxAC		Default is no access class barred is applied. The first instance of the parameter corresponds to Access Class 0, the second to Access Class 1 and so on up to Access Class 15. UE reads this IE of its access class stored in SIM.
>Access Class Barred	MP		Enumerated(not barred, barred)	

Condition	Explanation
Barred	Presence is mandatory if the IE "Cell Barred" has the value "Barred"; otherwise the element is not needed in the message.

10.3.7.10 HCS Cell re-selection information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Penalty_time	MD		Integer(0, 10, 20, 30, 40, 50, 60)	Default value is 0 which means = not used In seconds
Temporary_offsets	CV-*Penalty used*			
>Temporary_offset1	MP		Integer(~~10, 20, 30, 40, 50, 60, 70, infinity~~3, 6, 9, 12, 15, 18, 21, inf)	[dB]
>Temporary_offset2	CV-*FDD-Quality-Measure*		Integer(~~10, 20, 30, 40, 50, 60, 70, infinity~~2, 3, 4, 6, 8, 10, 12, inf)	[dB]

Condition	Explanation
Penalty used	Not allowed if IE Penalty time equals 'not used' else MP
FDD-Quality-Measure	Presence is not allowed if the IE "Cell_selection_and_reselection_quality_measure" has the value CPICH RSCP, otherwise the IE is mandatory. This conditional presence is implemented in ASN.1 by the use of a specific RSCP and EcN0 variant of 10.3.7.10.

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	

10.3.7.54a Qhcs

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Qhcs	MP		Integer(0..99)	Qhcs, mapped from CPICH Ec/No (FDD), see [4] [dB] 0: -24 1: -23.5 2: -23 3: -22.5 ... 45: -1.5 46: -1 47: -0.5 48: 0 49: (spare) ... 98: (spare) 99: (spare)
				Qhcs, mapped from CPICH RSCP (FDD), see [4] [dBm] 0: -115 1: -114 2: -113 : 88: -27 89: -26 90: -(spare) 91: -(spare) : 98: -(spare) 99: -(spare)
				Qhcs, mapped from PCCPCH RSCP (TDD), see [4] [dBm] 0: -115 1: -114 2: -113 : 88: -27 89: -26 90: -(spare) 91: -(spare) : 98: -(spare) 99: -(spare)

				Qhcs level, mapped from Averaged received signal level ~~RXLEV~~ RSSI (GSM), see [4] [dBm] 0: -110 1: -109 2: -108 : 61: -49 62: -48 63: -47 64: -46 65: -45 66: -44 67: -43 68: -42 69: -41 70: -40 71: -39 72: -38 73: -37 74: -(spare) : 98: -(spare) 99: -(spare)

11.3 Information element definitions

```
PenaltyTime-RSCP ::=                CHOICE {
    notUsed                             NULL,
    pt10                                TemporaryOffset1,
    pt20                                TemporaryOffset1,
    pt30                                TemporaryOffset1,
    pt40                                TemporaryOffset1,
    pt50                                TemporaryOffset1,
    pt60                                TemporaryOffset1
}



TemporaryOffset1 ::=                    ENUMERATED {
                                        to10to3, to20to6, to30to9, to40to12, to50to15,
                                        to60to18, to70to21, infinite }

TemporaryOffset2 ::=                ENUMERATED {
                                        to2, to3, to4, to6, to8,
                                        to10, to12, infinite }

TemporaryOffsetList ::=             SEQUENCE    {
        temporaryOffset1                TemporaryOffset1,
        temporaryOffset2                TemporaryOffset2
}
```

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th-31st August 2001

Tdoc r2-012097

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 989** ⌘ ev **r1** ⌘ Current version: **3.7.0** ⌘

*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 Signalling Connection Release
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	07/08/2001
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: ⌘

1 - The Signalling Connection Release Request procedure can result in the UE RRC and UE MM layers being out of sync with regard to the currently established signalling connections. This can lead to ambiguity about when the Initial Direct Transfer and Direct Transfer messages are used.

2 - Signalling connection release allows a signalling connection to be released without checking that the RABs associated with that CN domain are already released. This is inconsistant with the Radio Bearer Release Procedure which forbids the release of a signalling connection unless the RABs are released.

Summary of change: ⌘

1 - Section 8.1.4.2 is changed so that the RRC layer considers the signalling connection to be released when the signalling connection release request procedure is initiated. This ensures that UE RRC and UE MM layers maintain synchronisation.The name of the Signalling Connection Release Request message is changed to a more appropriate Signalling Connection Release Indication.

2 - An error case is added to check that the RABs are released before a signalling connection is release for a particular CN domain. The error case triggers the transmission of an RRC status message.

Isolated impact analysis:
Corrected functionality: Signalling connection release and signalling connection release request procedures.

1 - Correction to a function where the specification was ambiguous. Would not affect implementations behaving like indicated in the CR, would affect implementations otherwise.

2 - Correction to a function where the specification was missing rules. . Would not affect implementations behaving like indicated in the CR, would affect implementations otherwise.

Consequences if not approved:	⌘	The specification will contain ambiguities and be missing rules. This could lead to different implementations with different behaviour.

Clauses affected:	⌘	8.1.13.5 (new), 8.1.14, 8.1.14.1, 8.1.14.2, 8.1.14.3, 10.1.1, 10.2.47, 11.1, 11.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v4.1.0, CR 990
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. ⌘

8.1.13 Signalling connection release procedure

Figure 19: Signalling connection release procedure, normal case

8.1.13.1 General

The signalling connection release procedure is used to notify to the UE that one of its ongoing signalling connections has been released. The procedure does not initiate the release of the RRC connection.

8.1.13.2 Initiation of SIGNALLING CONNECTION RELEASE by the UTRAN

To initiate the procedure, the UTRAN transmits a SIGNALLING CONNECTION RELEASE message on DCCH using AM RLC.

8.1.13.3 Reception of SIGNALLING CONNECTION RELEASE by the UE

Upon reception of a SIGNALLING CONNECTION RELEASE message, the UE shall:

- indicate the release of the signalling connection and pass the value of the IE "CN domain identity" to upper layers;
- remove the signalling connection with the identity indicated by the IE "CN domain identity" from the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the entry for the SIGNALLING CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS;
    - the procedure ends.

8.1.13.4 Invalid SIGNALLING CONNECTION RELEASE message

If the UE receives a SIGNALLING CONNECTION RELEASE 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 as follows:

- include the IE "Identification of received message"; and
    - set the IE "Received message type" to SIGNALLING CONNECTION RELEASE;
    - set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the SIGNALLING CONNECTION RELEASE message in the table "Rejected transactions" in the variable TRANSACTIONS; and
    - clear that entry;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;

- transmit an RRC STATUS message on the uplink DCCH using AM RLC
- when the RRC STATUS message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures as if the invalid SIGNALLING CONNECTION RELEASE message has not been received.

8.1.13.5 Invalid configuration

If radio access bearers for the CN domain indicated by the IE "CN domain identity"exist in the variable ESTABLISHED_RABS:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC
- include the IE "Identification of received message"; and
  - set the IE "Received message type" to SIGNALLING CONNECTION RELEASE;
  - set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the SIGNALLING CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
- include the IE "Protocol error information" with contents set to the value "Message not compatible with receiver state";
- when the RRC STATUS message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures as if the invalid SIGNALLING CONNECTION RELEASE message has not been received.

8.1.14 Signalling connection release ~~request~~indication procedure

Figure 20: Signalling connection release ~~request~~indication procedure, normal case

8.1.14.1 General

The signalling connection release ~~request~~indication procedure is used by the UE to ~~request~~ indicate to the UTRAN that one of its signalling connections has been ~~should be~~ released. The procedure may in turn initiate the ~~signalling connection release or~~ RRC connection release procedure.

8.1.14.2 Initiation

The UE shall, on receiving a request to release (abort) the signalling connection from upper layers:

- initiate the signalling connection release ~~request~~indication procedure.

Upon initiation of the signalling connection release ~~request~~indication procedure in CELL_PCH or URA_PCH state, the UE shall:

- perform a cell update procedure, according to subclause 8.3.1, using the cause "uplink data transmission";

- when the cell update procedure completed successfully:
  - continue with the signalling connection release ~~request~~indication procedure as below;

The UE shall:

- set the IE "CN Domain Identity" to the value indicated by the upper layers. The value of the IE indicates the CN domain whose associated signalling connection the upper layers are ~~request~~indicationing to be released;
- remove the signalling connection with the identity indicated by upper layers from the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- transmit a SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION message on DCCH using AM RLC.

When the SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION message has been submitted to lower layers for transmission the procedure ends.

8.1.14.3 Reception of SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION by the UTRAN

Upon reception of a SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION message, the UTRAN requests the release of the signalling connection from upper layers. Upper layers may then initiate the release of the signalling connection.

10.1.1 Protocol extensions

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

NOTE 1: By avoiding the need for partial decoding (skipping uncomprehended IEs to continue decoding the remainder of the message), the RRC protocol extension mechanism also avoids the overhead of length determinants for extensions.

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

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

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

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

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

Extensions	Message
Critical and non-critical extensions	ACTIVE SET UPDATE 10.2.1 ASSISTANCE DATA DELIVERY 10.2.4 CELL CHANGE ORDER FROM UTRAN 10.2.5 CELL UPDATE CONFIRM 10.2.8 COUNTER CHECK 10.2.9 DOWNLINK DIRECT TRANSFER 10.2.11 HANDOVER TO UTRAN COMMAND 10.2.12 HANDOVER FROM UTRAN COMMAND 10.2.15 MEASUREMENT CONTROL 10.2.17 PHYSICAL CHANNEL RECONFIGURATION 10.2.22 PHYSICAL SHARED CHANNEL ALLOCATION 10.2.25 RADIO BEARER RECONFIGURATION 10.2.27 RADIO BEARER RELEASE 10.2.30 RADIO BEARER SETUP 10.2.33 RRC CONNECTION REJECT 10.2.36 RRC CONNECTION RELEASE 10.2.37 RRC CONNECTION SETUP 10.2.40 SECURITY MODE COMMAND 10.2.43 SIGNALLING CONNECTION RELEASE 10.2.46 TRANSPORT CHANNEL RECONFIGURATION 10.2.50 TRANSPORT FORMAT COMBINATION CONTROL 10.2.53 UE CAPABILITY ENQUIRY 10.2.55 UE CAPABILITY INFORMATION CONFIRM 10.2.57 UPLINK PHYSICAL CHANNEL CONTROL 10.2.59 URA UPDATE CONFIRM 10.2.61 UTRAN MOBILITY INFORMATION 10.2.62
Non-critical extensions only	ACTIVE SET UPDATE COMPLETE 10.2.2 ACTIVE SET UPDATE FAILURE 10.2.3 CELL CHANGE ORDER FROM UTRAN FAILURE 10.2.6 CELL UPDATE 10.2.7 COUNTER CHECK RESPONSE 10.2.10 HANDOVER TO UTRAN COMPLETE 10.2.13 INITIAL DIRECT TRANSFER 10.2.14 HANDOVER FROM UTRAN FAILURE 10.2.16 MEASUREMENT CONTROL FAILURE 10.2.18 MEASUREMENT REPORT 10.2.19 PAGING TYPE 1 10.2.20 PAGING TYPE 2 10.2.21 PHYSICAL CHANNEL RECONFIGURATION COMPLETE 10.2.23 PHYSICAL CHANNEL RECONFIGURATION FAILURE 10.2.24 PUSCH CAPACITY REQUEST 10.2.26 RADIO BEARER RECONFIGURATION COMPLETE 10.2.28 RADIO BEARER RECONFIGURATION FAILURE 10.2.29 RADIO BEARER RELEASE COMPLETE 10.2.31 RADIO BEARER RELEASE FAILURE 10.2.32 RADIO BEARER SETUP COMPLETE 10.2.34 RADIO BEARER SETUP FAILURE 10.2.35 RRC CONNECTION RELEASE COMPLETE 10.2.38 RRC CONNECTION REQUEST 10.2.39 RRC CONNECTION SETUP COMPLETE 10.2.41 RRC STATUS 10.2.42 SECURITY MODE COMPLETE 10.2.44 SECURITY MODE FAILURE 10.2.45 SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION10.2.47 Master Information Block 10.2.48.8.1 System Information Block type 1 to System Information Block type 17 10.2.48.8.2 to 10.2.48.8.19 SYSTEM INFORMATION CHANGE INDICATION 10.2.49 TRANSPORT CHANNEL RECONFIGURATION COMPLETE 10.2.51 TRANSPORT CHANNEL RECONFIGURATION FAILURE 10.2.52 TRANSPORT FORMAT COMBINATION CONTROL FAILURE 10.2.54 UE CAPABILITY INFORMATION 10.2.56 UPLINK DIRECT TRANSFER 10.2.58 URA UPDATE 10.2.60 UTRAN MOBILITY INFORMATION CONFIRM 10.2.63 UTRAN MOBILITY INFORMATION FAILURE 10.2.64
No extensions	SYSTEM INFORMATION 10.2.48

Extensions	Message
	First Segment 10.2.48.1 Subsequent or last Segment 10.2.48.3 Complete SIB 10.2.48.5 SIB content 10.2.48.8.1

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

10.2.47 SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION

This message is used by the UE to ~~request~~ inidcate to UTRAN~~for~~ the release of an existing signalling connection.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Message Type	MP		Message type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
CN information elements				
CN domain identity	MP		CN domain identity 10.3.1.1	

11.1 General message structure

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

BEGIN

IMPORTS

    ActiveSetUpdate,
    ActiveSetUpdateComplete,
    ActiveSetUpdateFailure,
    AssistanceDataDelivery,
    CellChangeOrderFromUTRAN,
    CellChangeOrderFromUTRANFailure,
    CellUpdate,
    CellUpdateConfirm-CCCH,
    CellUpdateConfirm,
    CounterCheck,
    CounterCheckResponse,
    DownlinkDirectTransfer,
    HandoverToUTRANComplete,
    InitialDirectTransfer,
    HandoverFromUTRANCommand-GSM,
    HandoverFromUTRANCommand-CDMA2000,
    HandoverFromUTRANFailure,
    MeasurementControl,
    MeasurementControlFailure,
    MeasurementReport,
    PagingType1,
    PagingType2,
    PhysicalChannelReconfiguration,
    PhysicalChannelReconfigurationComplete,
    PhysicalChannelReconfigurationFailure,
    PhysicalSharedChannelAllocation,
    PUSCHCapacityRequest,
    RadioBearerReconfiguration,
    RadioBearerReconfigurationComplete,
    RadioBearerReconfigurationFailure,
    RadioBearerRelease,
    RadioBearerReleaseComplete,
    RadioBearerReleaseFailure,
    RadioBearerSetup,
    RadioBearerSetupComplete,
    RadioBearerSetupFailure,
    RRCConnectionReject,
    RRCConnectionRelease,
    RRCConnectionRelease-CCCH,
    RRCConnectionReleaseComplete,
    RRCConnectionRequest,
    RRCConnectionSetup,
    RRCConnectionSetupComplete,
    RRCStatus,
    SecurityModeCommand,
    SecurityModeComplete,
    SecurityModeFailure,
    SignallingConnectionRelease,
    SignallingConnectionRelease~~Request~~Indication,
    SystemInformation-BCH,
    SystemInformation-FACH,
    SystemInformationChangeIndication,
    TransportChannelReconfiguration,
    TransportChannelReconfigurationComplete,
    TransportChannelReconfigurationFailure,
    TransportFormatCombinationControl,
    TransportFormatCombinationControlFailure,
    UECapabilityEnquiry,
    UECapabilityInformation,
    UECapabilityInformationConfirm,
    UplinkDirectTransfer,
    UplinkPhysicalChannelControl,
    URAUpdate,
    URAUpdateConfirm,
    URAUpdateConfirm-CCCH,
    UTRANMobilityInformation,
    UTRANMobilityInformationConfirm,
    UTRANMobilityInformationFailure
```

```
FROM PDU-definitions

-- User Equipment IEs :
    IntegrityCheckInfo
FROM InformationElements;

--**************************************************************
--
-- Downlink DCCH messages
--
--**************************************************************

DL-DCCH-Message ::= SEQUENCE {
    integrityCheckInfo      IntegrityCheckInfo      OPTIONAL,
    message                 DL-DCCH-MessageType
}

DL-DCCH-MessageType ::= CHOICE {
    activeSetUpdate                     ActiveSetUpdate,
    assistanceDataDelivery              AssistanceDataDelivery,
    cellChangeOrderFromUTRAN            CellChangeOrderFromUTRAN,
    cellUpdateConfirm                   CellUpdateConfirm,
    counterCheck                        CounterCheck,
    downlinkDirectTransfer              DownlinkDirectTransfer,
    handoverFromUTRANCommand-GSM        HandoverFromUTRANCommand-GSM,
    handoverFromUTRANCommand-CDMA2000   HandoverFromUTRANCommand-CDMA2000,
    measurementControl                  MeasurementControl,
    pagingType2                         PagingType2,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration,
    physicalSharedChannelAllocation     PhysicalSharedChannelAllocation,
    radioBearerReconfiguration          RadioBearerReconfiguration,
    radioBearerRelease                  RadioBearerRelease,
    radioBearerSetup                    RadioBearerSetup,
    rrcConnectionRelease                RRCConnectionRelease,
    securityModeCommand                 SecurityModeCommand,
    signallingConnectionRelease         SignallingConnectionRelease,
    transportChannelReconfiguration     TransportChannelReconfiguration,
    transportFormatCombinationControl   TransportFormatCombinationControl,
    ueCapabilityEnquiry                 UECapabilityEnquiry,
    ueCapabilityInformationConfirm      UECapabilityInformationConfirm,
    uplinkPhysicalChannelControl        UplinkPhysicalChannelControl,
    uraUpdateConfirm                    URAUpdateConfirm,
    utranMobilityInformation            UTRANMobilityInformation,
    extension                           NULL
}

--**************************************************************
--
-- Uplink DCCH messages
--
--**************************************************************

UL-DCCH-Message ::= SEQUENCE {
    integrityCheckInfo      IntegrityCheckInfo      OPTIONAL,
    message                 UL-DCCH-MessageType
}

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete             ActiveSetUpdateComplete,
    activeSetUpdateFailure              ActiveSetUpdateFailure,
    cellChangeOrderFromUTRANFailure     CellChangeOrderFromUTRANFailure,
    counterCheckResponse                CounterCheckResponse,
    handoverToUTRANComplete             HandoverToUTRANComplete,
    initialDirectTransfer               InitialDirectTransfer,
    handoverFromUTRANFailure            HandoverFromUTRANFailure,
    measurementControlFailure           MeasurementControlFailure,
    measurementReport                   MeasurementReport,
    physicalChannelReconfigurationComplete
                                        PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure
                                        PhysicalChannelReconfigurationFailure,
    radioBearerReconfigurationComplete  RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure   RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete          RadioBearerReleaseComplete,
    radioBearerReleaseFailure           RadioBearerReleaseFailure,
    radioBearerSetupComplete            RadioBearerSetupComplete,
    radioBearerSetupFailure             RadioBearerSetupFailure,
    rrcConnectionReleaseComplete        RRCConnectionReleaseComplete,
```

```
    rrcConnectionSetupComplete          RRCConnectionSetupComplete,
    rrcStatus                           RRCStatus,
    securityModeComplete                SecurityModeComplete,
    securityModeFailure                 SecurityModeFailure,
    signallingConnectionRelease~~Request~~Indication    SignallingConnectionRelease~~Request~~Indication,
    transportChannelReconfigurationComplete
                                        TransportChannelReconfigurationComplete,
    transportChannelReconfigurationFailure
                                        TransportChannelReconfigurationFailure,
    transportFormatCombinationControlFailure
                                        TransportFormatCombinationControlFailure,
    ueCapabilityInformation             UECapabilityInformation,
    uplinkDirectTransfer                UplinkDirectTransfer,
    utranMobilityInformationConfirm     UTRANMobilityInformationConfirm,
    utranMobilityInformationFailure     UTRANMobilityInformationFailure,
    extension                           NULL
}
```

11.2 PDU definitions

```
-- **************************************************
--
-- SIGNALLING CONNECTION RELEASE REQUESTINDICATION
--
-- **************************************************

SignallingConnectionReleaseRequestIndication ::= SEQUENCE {
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}
```

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th-31st August 2001

Tdoc r2-012097

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 990** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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

Title:	⌘	Correction to Signalling Connection Release
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	07/08/2001
Category:	⌘	**A**
Release:	⌘	REL-4

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REL-5	*(Release 5)*

Reason for change: ⌘

1 - The Signalling Connection Release Request procedure can result in the UE RRC and UE MM layers being out of sync with regard to the currently established signalling connections. This can lead to ambiguity about when the Initial Direct Transfer and Direct Transfer messages are used.

2 - Signalling connection release allows a signalling connection to be released without checking that the RABs associated with that CN domain are already released. This is inconsistant with the Radio Bearer Release Procedure which forbids the release of a signalling connection unless the RABs are released.

Summary of change: ⌘

1 - Section 8.1.4.2 is changed so that the RRC layer considers the signalling connection to be released when the signalling connection release request procedure is initiated. This ensures that UE RRC and UE MM layers maintain synchronisation.The name of the Signalling Connection Release Request message is changed to a more appropriate Signalling Connection Release Indication.

2 - An error case is added to check that the RABs are released before a signalling connection is release for a particular CN domain. The error case triggers the transmission of an RRC status message.

Isolated impact analysis:
Corrected functionality: Signalling connection release and signalling connection release request procedures.

1 - Correction to a function where the specification was ambiguous. Would not affect implementations behaving like indicated in the CR, would affect implementations otherwise.

2 - Correction to a function where the specification was missing rules. . Would not affect implementations behaving like indicated in the CR, would affect implementations otherwise.

Consequences if not approved:	⌘	The specification will contain ambiguities and be missing rules. This could lead to different implementations with different behaviour.

Clauses affected:	⌘	8.1.13.5 (new), 8.1.14, 8.1.14.1, 8.1.14.2, 8.1.14.3, 10.1.1, 10.2.47, 11.1, 11.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v3.7.0, CR 989r1
Other comments:	⌘			

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8.1.13 Signalling connection release procedure

Figure 19: Signalling connection release procedure, normal case

8.1.13.1 General

The signalling connection release procedure is used to notify to the UE that one of its ongoing signalling connections has been released. The procedure does not initiate the release of the RRC connection.

8.1.13.2 Initiation of SIGNALLING CONNECTION RELEASE by the UTRAN

To initiate the procedure, the UTRAN transmits a SIGNALLING CONNECTION RELEASE message on DCCH using AM RLC.

8.1.13.3 Reception of SIGNALLING CONNECTION RELEASE by the UE

Upon reception of a SIGNALLING CONNECTION RELEASE message, the UE shall:

- indicate the release of the signalling connection and pass the value of the IE "CN domain identity" to upper layers;
- remove the signalling connection with the identity indicated by the IE "CN domain identity" from the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the entry for the SIGNALLING CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS;
    - the procedure ends.

8.1.13.4 Invalid SIGNALLING CONNECTION RELEASE message

If the UE receives a SIGNALLING CONNECTION RELEASE 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 as follows:

- include the IE "Identification of received message"; and
    - set the IE "Received message type" to SIGNALLING CONNECTION RELEASE;
    - set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the SIGNALLING CONNECTION RELEASE message in the table "Rejected transactions" in the variable TRANSACTIONS; and
    - clear that entry;
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;

- transmit an RRC STATUS message on the uplink DCCH using AM RLC
- when the RRC STATUS message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures as if the invalid SIGNALLING CONNECTION RELEASE message has not been received.

8.1.13.5 Invalid configuration

If radio access bearers for the CN domain indicated by the IE "CN domain identity"exist in the variable ESTABLISHED_RABS:

- transmit an RRC STATUS message on the uplink DCCH using AM RLC
- include the IE "Identification of received message"; and
  - set the IE "Received message type" to SIGNALLING CONNECTION RELEASE;
  - set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the SIGNALLING CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - clear that entry;
- include the IE "Protocol error information" with contents set to the value "Message not compatible with receiver state";
- when the RRC STATUS message has been submitted to lower layers for transmission:
  - continue with any ongoing processes and procedures as if the invalid SIGNALLING CONNECTION RELEASE message has not been received.

8.1.14 Signalling connection release ~~request~~indication procedure

Figure 20: Signalling connection release ~~request~~indication procedure, normal case

8.1.14.1 General

The signalling connection release ~~request~~indication procedure is used by the UE to ~~request~~ indicate to the UTRAN that one of its signalling connections has been ~~should be~~ released. The procedure may in turn initiate the ~~signalling connection release or~~ RRC connection release procedure.

8.1.14.2 Initiation

The UE shall, on receiving a request to release (abort) the signalling connection from upper layers:

- initiate the signalling connection release ~~request~~indication procedure.

Upon initiation of the signalling connection release ~~request~~indication procedure in CELL_PCH or URA_PCH state, the UE shall:

- perform a cell update procedure, according to subclause 8.3.1, using the cause "uplink data transmission";

- when the cell update procedure completed successfully:
  - continue with the signalling connection release ~~request~~indication procedure as below;

The UE shall:

- set the IE "CN Domain Identity" to the value indicated by the upper layers. The value of the IE indicates the CN domain whose associated signalling connection the upper layers are ~~request~~indicationing to be released;
- remove the signalling connection with the identity indicated by upper layers from the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- transmit a SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION message on DCCH using AM RLC.

When the SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION message has been submitted to lower layers for transmission the procedure ends.

8.1.14.3 Reception of SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION by the UTRAN

Upon reception of a SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION message, the UTRAN requests the release of the signalling connection from upper layers. Upper layers may then initiate the release of the signalling connection.

10.1.1 Protocol extensions

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

NOTE 1: By avoiding the need for partial decoding (skipping uncomprehended IEs to continue decoding the remainder of the message), the RRC protocol extension mechanism also avoids the overhead of length determinants for extensions.

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

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

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

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

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

Extensions	Message
Critical and non-critical extensions	ACTIVE SET UPDATE 10.2.1 ASSISTANCE DATA DELIVERY 10.2.4 CELL CHANGE ORDER FROM UTRAN 10.2.5 CELL UPDATE CONFIRM 10.2.8 COUNTER CHECK 10.2.9 DOWNLINK DIRECT TRANSFER 10.2.11 HANDOVER TO UTRAN COMMAND 10.2.12 HANDOVER FROM UTRAN COMMAND 10.2.15 MEASUREMENT CONTROL 10.2.17 PHYSICAL CHANNEL RECONFIGURATION 10.2.22 PHYSICAL SHARED CHANNEL ALLOCATION 10.2.25 RADIO BEARER RECONFIGURATION 10.2.27 RADIO BEARER RELEASE 10.2.30 RADIO BEARER SETUP 10.2.33 RRC CONNECTION REJECT 10.2.36 RRC CONNECTION RELEASE 10.2.37 RRC CONNECTION SETUP 10.2.40 SECURITY MODE COMMAND 10.2.43 SIGNALLING CONNECTION RELEASE 10.2.46 TRANSPORT CHANNEL RECONFIGURATION 10.2.50 TRANSPORT FORMAT COMBINATION CONTROL 10.2.53 UE CAPABILITY ENQUIRY 10.2.55 UE CAPABILITY INFORMATION CONFIRM 10.2.57 UPLINK PHYSICAL CHANNEL CONTROL 10.2.59 URA UPDATE CONFIRM 10.2.61 UTRAN MOBILITY INFORMATION 10.2.62
Non-critical extensions only	ACTIVE SET UPDATE COMPLETE 10.2.2 ACTIVE SET UPDATE FAILURE 10.2.3 CELL CHANGE ORDER FROM UTRAN FAILURE 10.2.6 CELL UPDATE 10.2.7 COUNTER CHECK RESPONSE 10.2.10 HANDOVER TO UTRAN COMPLETE 10.2.13 INITIAL DIRECT TRANSFER 10.2.14 HANDOVER FROM UTRAN FAILURE 10.2.16 MEASUREMENT CONTROL FAILURE 10.2.18 MEASUREMENT REPORT 10.2.19 PAGING TYPE 1 10.2.20 PAGING TYPE 2 10.2.21 PHYSICAL CHANNEL RECONFIGURATION COMPLETE 10.2.23 PHYSICAL CHANNEL RECONFIGURATION FAILURE 10.2.24 PUSCH CAPACITY REQUEST 10.2.26 RADIO BEARER RECONFIGURATION COMPLETE 10.2.28 RADIO BEARER RECONFIGURATION FAILURE 10.2.29 RADIO BEARER RELEASE COMPLETE 10.2.31 RADIO BEARER RELEASE FAILURE 10.2.32 RADIO BEARER SETUP COMPLETE 10.2.34 RADIO BEARER SETUP FAILURE 10.2.35 RRC CONNECTION RELEASE COMPLETE 10.2.38 RRC CONNECTION REQUEST 10.2.39 RRC CONNECTION SETUP COMPLETE 10.2.41 RRC STATUS 10.2.42 SECURITY MODE COMPLETE 10.2.44 SECURITY MODE FAILURE 10.2.45 SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION10.2.47 Master Information Block 10.2.48.8.1 System Information Block type 1 to System Information Block type 17 10.2.48.8.2 to 10.2.48.8.19 SYSTEM INFORMATION CHANGE INDICATION 10.2.49 TRANSPORT CHANNEL RECONFIGURATION COMPLETE 10.2.51 TRANSPORT CHANNEL RECONFIGURATION FAILURE 10.2.52 TRANSPORT FORMAT COMBINATION CONTROL FAILURE 10.2.54 UE CAPABILITY INFORMATION 10.2.56 UPLINK DIRECT TRANSFER 10.2.58 URA UPDATE 10.2.60 UTRAN MOBILITY INFORMATION CONFIRM 10.2.63 UTRAN MOBILITY INFORMATION FAILURE 10.2.64
No extensions	SYSTEM INFORMATION 10.2.48

Extensions	Message
	First Segment 10.2.48.1 Subsequent or last Segment 10.2.48.3 Complete SIB 10.2.48.5 SIB content 10.2.48.8.1

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

10.2.47 SIGNALLING CONNECTION RELEASE ~~REQUEST~~INDICATION

This message is used by the UE to ~~request~~ inidcate to UTRAN~~for~~ the release of an existing signalling connection.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Message Type	MP		Message type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
CN information elements				
CN domain identity	MP		CN domain identity 10.3.1.1	

11.1 General message structure

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

BEGIN

IMPORTS

    ActiveSetUpdate,
    ActiveSetUpdateComplete,
    ActiveSetUpdateFailure,
    AssistanceDataDelivery,
    CellChangeOrderFromUTRAN,
    CellChangeOrderFromUTRANFailure,
    CellUpdate,
    CellUpdateConfirm-CCCH,
    CellUpdateConfirm,
    CounterCheck,
    CounterCheckResponse,
    DownlinkDirectTransfer,
    HandoverToUTRANComplete,
    InitialDirectTransfer,
    HandoverFromUTRANCommand-GSM,
    HandoverFromUTRANCommand-CDMA2000,
    HandoverFromUTRANFailure,
    MeasurementControl,
    MeasurementControlFailure,
    MeasurementReport,
    PagingType1,
    PagingType2,
    PhysicalChannelReconfiguration,
    PhysicalChannelReconfigurationComplete,
    PhysicalChannelReconfigurationFailure,
    PhysicalSharedChannelAllocation,
    PUSCHCapacityRequest,
    RadioBearerReconfiguration,
    RadioBearerReconfigurationComplete,
    RadioBearerReconfigurationFailure,
    RadioBearerRelease,
    RadioBearerReleaseComplete,
    RadioBearerReleaseFailure,
    RadioBearerSetup,
    RadioBearerSetupComplete,
    RadioBearerSetupFailure,
    RRCConnectionReject,
    RRCConnectionRelease,
    RRCConnectionRelease-CCCH,
    RRCConnectionReleaseComplete,
    RRCConnectionRequest,
    RRCConnectionSetup,
    RRCConnectionSetupComplete,
    RRCStatus,
    SecurityModeCommand,
    SecurityModeComplete,
    SecurityModeFailure,
    SignallingConnectionRelease,
    SignallingConnectionRelease~~Request~~Indication,
    SystemInformation-BCH,
    SystemInformation-FACH,
    SystemInformationChangeIndication,
    TransportChannelReconfiguration,
    TransportChannelReconfigurationComplete,
    TransportChannelReconfigurationFailure,
    TransportFormatCombinationControl,
    TransportFormatCombinationControlFailure,
    UECapabilityEnquiry,
    UECapabilityInformation,
    UECapabilityInformationConfirm,
    UplinkDirectTransfer,
    UplinkPhysicalChannelControl,
    URAUpdate,
    URAUpdateConfirm,
    URAUpdateConfirm-CCCH,
    UTRANMobilityInformation,
    UTRANMobilityInformationConfirm,
    UTRANMobilityInformationFailure
```

```
FROM PDU-definitions

-- User Equipment IEs :
    IntegrityCheckInfo
FROM InformationElements;

--**************************************************************
--
-- Downlink DCCH messages
--
--**************************************************************

DL-DCCH-Message ::= SEQUENCE {
    integrityCheckInfo      IntegrityCheckInfo      OPTIONAL,
    message                 DL-DCCH-MessageType
}

DL-DCCH-MessageType ::= CHOICE {
    activeSetUpdate                     ActiveSetUpdate,
    assistanceDataDelivery              AssistanceDataDelivery,
    cellChangeOrderFromUTRAN            CellChangeOrderFromUTRAN,
    cellUpdateConfirm                   CellUpdateConfirm,
    counterCheck                        CounterCheck,
    downlinkDirectTransfer              DownlinkDirectTransfer,
    handoverFromUTRANCommand-GSM        HandoverFromUTRANCommand-GSM,
    handoverFromUTRANCommand-CDMA2000   HandoverFromUTRANCommand-CDMA2000,
    measurementControl                  MeasurementControl,
    pagingType2                         PagingType2,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration,
    physicalSharedChannelAllocation     PhysicalSharedChannelAllocation,
    radioBearerReconfiguration          RadioBearerReconfiguration,
    radioBearerRelease                  RadioBearerRelease,
    radioBearerSetup                    RadioBearerSetup,
    rrcConnectionRelease                RRCConnectionRelease,
    securityModeCommand                 SecurityModeCommand,
    signallingConnectionRelease         SignallingConnectionRelease,
    transportChannelReconfiguration     TransportChannelReconfiguration,
    transportFormatCombinationControl   TransportFormatCombinationControl,
    ueCapabilityEnquiry                 UECapabilityEnquiry,
    ueCapabilityInformationConfirm      UECapabilityInformationConfirm,
    uplinkPhysicalChannelControl        UplinkPhysicalChannelControl,
    uraUpdateConfirm                    URAUpdateConfirm,
    utranMobilityInformation            UTRANMobilityInformation,
    extension                           NULL
}

--**************************************************************
--
-- Uplink DCCH messages
--
--**************************************************************

UL-DCCH-Message ::= SEQUENCE {
    integrityCheckInfo      IntegrityCheckInfo      OPTIONAL,
    message                 UL-DCCH-MessageType
}

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete             ActiveSetUpdateComplete,
    activeSetUpdateFailure              ActiveSetUpdateFailure,
    cellChangeOrderFromUTRANFailure     CellChangeOrderFromUTRANFailure,
    counterCheckResponse                CounterCheckResponse,
    handoverToUTRANComplete             HandoverToUTRANComplete,
    initialDirectTransfer               InitialDirectTransfer,
    handoverFromUTRANFailure            HandoverFromUTRANFailure,
    measurementControlFailure           MeasurementControlFailure,
    measurementReport                   MeasurementReport,
    physicalChannelReconfigurationComplete
                                        PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure
                                        PhysicalChannelReconfigurationFailure,
    radioBearerReconfigurationComplete  RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure   RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete          RadioBearerReleaseComplete,
    radioBearerReleaseFailure           RadioBearerReleaseFailure,
    radioBearerSetupComplete            RadioBearerSetupComplete,
    radioBearerSetupFailure             RadioBearerSetupFailure,
    rrcConnectionReleaseComplete        RRCConnectionReleaseComplete,
```

```
    rrcConnectionSetupComplete          RRCConnectionSetupComplete,
    rrcStatus                           RRCStatus,
    securityModeComplete                SecurityModeComplete,
    securityModeFailure                 SecurityModeFailure,
    signallingConnectionRelease~~Request~~Indication    SignallingConnectionRelease~~Request~~Indication,
    transportChannelReconfigurationComplete
                                        TransportChannelReconfigurationComplete,
    transportChannelReconfigurationFailure
                                        TransportChannelReconfigurationFailure,
    transportFormatCombinationControlFailure
                                        TransportFormatCombinationControlFailure,
    ueCapabilityInformation             UECapabilityInformation,
    uplinkDirectTransfer                UplinkDirectTransfer,
    utranMobilityInformationConfirm     UTRANMobilityInformationConfirm,
    utranMobilityInformationFailure     UTRANMobilityInformationFailure,
    extension                           NULL
}
```

11.2 PDU definitions

```
-- **************************************************
--
-- SIGNALLING CONNECTION RELEASE REQUESTINDICATION
--
-- **************************************************

SignallingConnectionReleaseRequestIndication ::= SEQUENCE {
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}
```

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th-31st August 2001

Tdoc r2-012099

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **991** ⌘ ev **r1** ⌘ Current version: **3.7.0** ⌘

*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 cell update procedures
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	15/08/2001
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: ⌘

1 - ~~Section 8.3.1.2 defines cell and URA update causes to be used in different scenarios. Only the URA update causes 'URA reselection' and 'Periodic URA update' are described. This is inconsistant with URA update message which includes a cause value 're-entering service area' and section 8.3.1.4.1 which specifies that the ura update message is also sent when re-entering service area.~~

The URA update message includes a cause value 're-entering service area' that according to the procedural text is never used. (A UE never initiates a URA update procedure with the cause 're-entering service area'. When the UE has an ongoing URA update procedure and re-enters service area, it will transmit a URA update message but in this situation the cause value will be 'reselection' or 'periodic update' depending on the cause that initiated the procedure.)

2 - Section 8.3.1.3 states that the UE shall send a Cell update with the cause value that is valid at the time that the message is submitted to lower layers for transmission. This means that the cause value in a retransmission of a Cell update may be different from that in the original message.

If the original Cell Update message is triggered due to a 'radio link failure', and the UE is moving in and out of service area, it is possible that a retransmission of the message could have the cause value 're-entering service area' (as 're-entering service area' is a higher priority cause than 'radio link failure'). This could lead the network into taking an incorrect action when it successfully receives one of the retransmissions - the network may not re-establish the dedicated channel as requested by orignal Cell Update with cause 'radio link failure'

3 - If a reconfiguration procedure fails due to a physical channel establishment failure, the UE initiates a cell update procedure with the cause value 'radio link failure'. However, the variable ORDERED RECONFIGURATION will be TRUE due to the failed reconfiguration procedure and so the UTRAN is unable to use

	the Cell Update Confirm message in order to re-establish the dedicated channel. This problem also arises if the there is a radio link failure during a reconfiguration procedure. 4 - Section 8.3.1.2 states 're-start timer T314/T315' when the timer has not previously been started. 5 - The variable CELL_UPDATE_STARTED is set to TRUE when the cell or URA update procedure is initaited. The variable is checked when a reconfiguration message is received in order to prevent initiation of a reconfiguration procedure whilst a cell update is ongoing. However, the variable is not set to FALSE at the very end of the procedure but after the first Cell Update Confirm message is received. If the procedure consists of several Cell Update and Cell Update Confirm messages then the variable will be incorrectly set for part of the procedure, allowing a conflicting reconfiguration procedure to be accepted. 6
Summary of change: ⌘	1 - ~~The URA update cause re-entering service area is added to the list of causes in section 8.3.1.2.~~ The un-used cause value is removed from the tabular description and changed to dummy in the ASN.1 2 - The 'radio link failure' cause value is moved up the priority order so that the scenario descibed above can not occur. Retransmissions of the cell update message will always use the 'radio link failure' cause value. 3 - In the case of a cell update procedure is triggered by a UE due to radio link failure or a physical channel establishment failure during an ongoing reconfiguration procedure, the configuration requested by the network is redundant and can be discarded by the UE. Therefore, it is porposed that the variable ORDERED RECONFIGURATION is set to FALSE before initiating a cell update with cause 'radio link failure'. This enables the UTRAN to include configuration parameters in the cell update confirm. 4 - 're-' is removed to clarify that the timer has been previously started. 5 - The variable CELL_UPDATE_STARTED is only set to false at the end of the procedure. **Isolated impact analysis:** Corrected functionality: Cell update and URA update procedures 1, - Correction to a function where the specification contained some contradictions. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise 4 - Correction to a function where the specification was not sufficiently explicit. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise
Consequences if not approved: ⌘	The specification would still have functions that contain contradictions, are ambiguous or insufficiently explicit.

Clauses affected: ⌘	8.3.1.2, 8.3.1.6, 8.3.1.7a, 8.3.1.8, 8.3.1.9, 8.3.1.9a, 8.3.1.10, 8.3.1.11, 8.3.1.12, 8.3.1.13, 8.3.1.14, 10.3.3.46, 11

Other specs affected:	⌘	Other core specifications Test specifications O&M Specifications	⌘	25.331 v4.1.0, CR 992
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. ⌘

8.3 RRC connection mobility procedures

8.3.1 Cell and URA update procedures

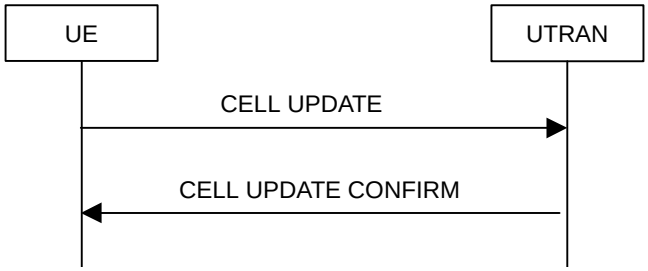

Figure 38: Cell update procedure, basic flow

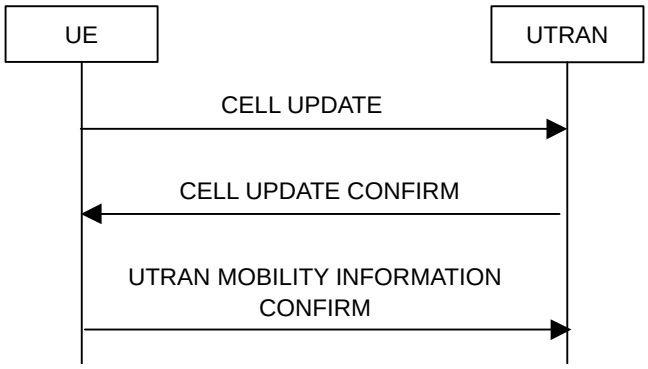

Figure 39: Cell update procedure with update of UTRAN mobility information

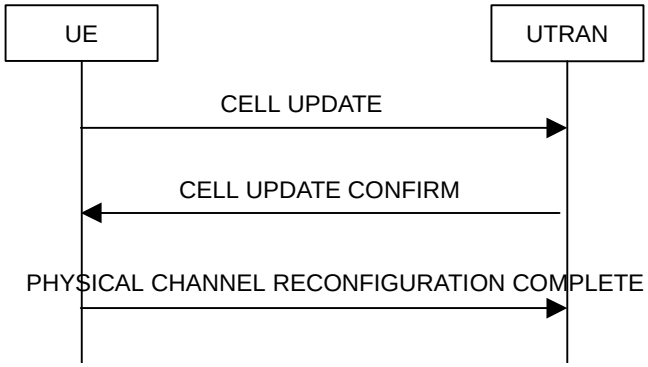

Figure 40: Cell update procedure with physical channel reconfiguration

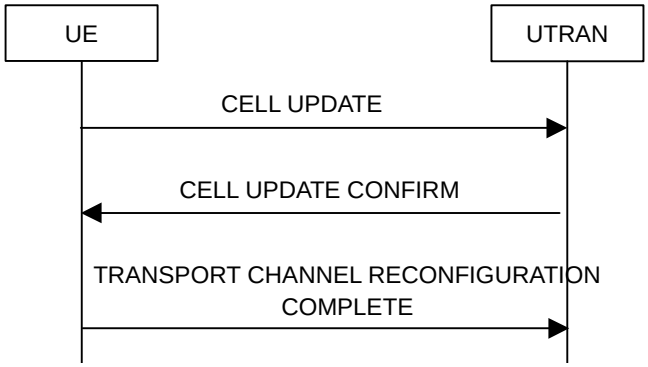

Figure 41: Cell update procedure with transport channel reconfiguration

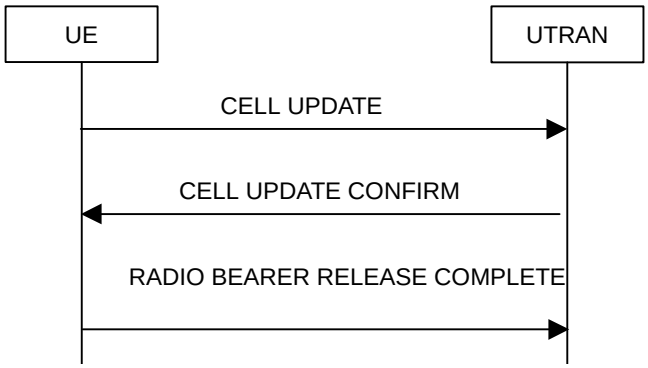

Figure 42: Cell update procedure with radio bearer release

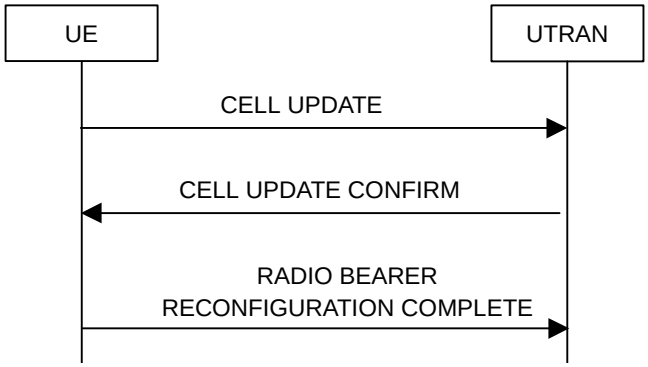

Figure 43: Cell update procedure with radio bearer reconfiguration

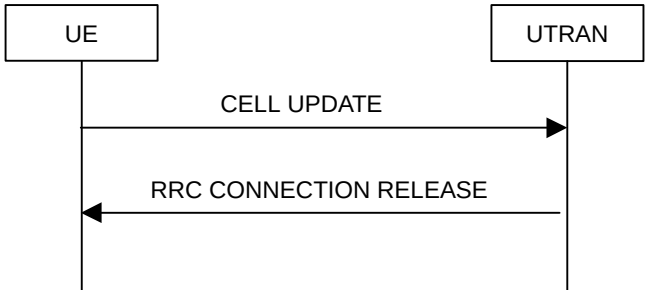

Figure 44: Cell update procedure, failure case

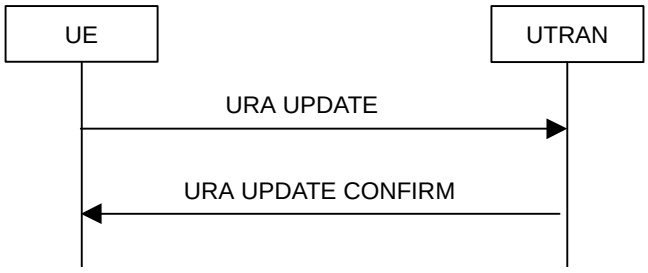

Figure 45: URA update procedure, basic flow

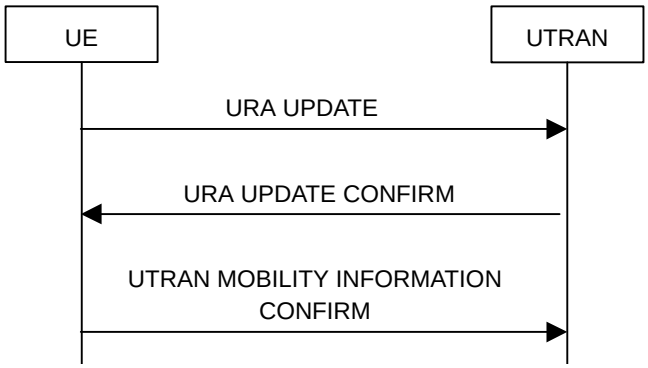

Figure 46: URA update procedure with update of UTRAN mobility information

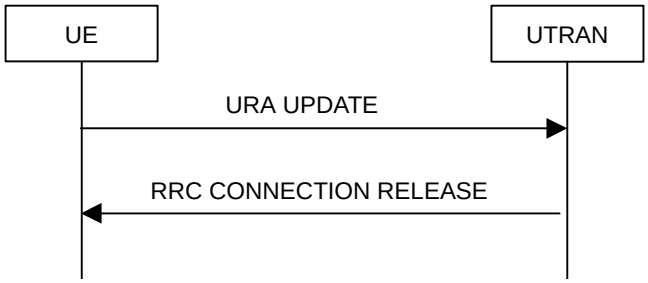

Figure 47: URA update procedure, failure case

8.3.1.1 General

The URA update and cell update procedures serve several main purposes:

- to notify UTRAN after re-entering service area in the URA_PCH or CELL_PCH state;
- to notify UTRAN of an RLC unrecoverable error [16] on an AM RLC entity;
- to be used as a supervision mechanism in the CELL_FACH, CELL_PCH, or URA_PCH state by means of periodical update;

In addition, the URA update procedure also serves the following purpose:

- to retrieve a new URA identity after cell re-selection to a cell not belonging to the current URA assigned to the UE in URA_PCH state;

In addition, the cell update procedure also serves the following purposes:

- to update UTRAN with the current cell the UE is camping on after cell reselection;
- to act on a radio link failure in the CELL_DCH state;
- when triggered in the URA_PCH or CELL_PCH state, to notify UTRAN of a transition to the CELL_FACH state due to the reception of UTRAN originated paging or due to a request to transmit uplink data.

The URA update and cell update procedures may:

- include an update of mobility related information in the UE;
- cause a state transition from the CELL_FACH state to the CELL_DCH, CELL_PCH or URA_PCH states or idle mode.

The cell update procedure may also include:

- a re-establish of AM RLC entities;

- a radio bearer release, radio bearer reconfiguration, transport channel reconfiguration or physical channel reconfiguration;

8.3.1.2 Initiation

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

- Uplink data transmission:
  - if the UE is in URA_PCH or CELL_PCH state; and
  - if the UE has uplink RLC data PDU or uplink RLC control PDU on RB1 or upwards to transmit:
    - perform cell update using the cause "uplink data transmission".
- Paging response:
  - if the criteria for performing cell update with the cause specified above in the current subclause is not met; and
  - if the UE in URA_PCH or CELL_PCH state, receives a PAGING TYPE 1 message fulfilling the conditions for initiating a cell update procedure specified in subclause 8.1.2.3:
    - perform cell update using the cause "paging response".
- Radio link failure:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_DCH state; and
  - if the criteria for radio link failure is met as specified in subclause 8.5.6:
    - perform cell update using the cause "radio link failure".
- Re-entering service area:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the UE has been out of service area and re-enters service area before T307 or T317 expires:
    - perform cell update using the cause "re-entering service area".
- ~~Radio link failure:~~
  - ~~if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and~~
  - ~~if the UE is in CELL_DCH state; and~~
  - ~~if the criteria for radio link failure is met as specified in subclause 8.5.6:~~
    - ~~perform cell update using the cause "radio link failure".~~
- RLC unrecoverable error:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE detects RLC unrecoverable error [16] in an AM RLC entity:
    - perform cell update using the cause "RLC unrecoverable error".

- Cell reselection:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the UE performs cell re-selection or the variable C_RNTI is empty:
    - perform cell update using the cause "cell reselection".
- Periodical cell update:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the timer T305 expires; and
  - if the criteria for "in service area" as specified in subclause 8.5.5.2 is fulfilled; and
  - if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":
    - perform cell update using the cause "periodical cell update".

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

- URA reselection:
  - if the UE detects that the current URA assigned to the UE, stored in the variable URA_IDENTITY, is not present in the list of URA identities in system information block type 2; or
  - if the list of URA identities in system information block type 2 is empty; or
  - if the system information block type 2 can not be found:
    - perform URA update using the cause "change of URA".
- Periodic URA update:
  - if the criteria for performing URA update with the causes as specified above in the current subclause are not met; and
  - if the timer T305 expires while the UE is in the service area; and
  - if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":
    - perform URA update using the cause "periodic URA update".

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

- stop timer T305;
- if the UE is in CELL_DCH state:
  - in the variable RB_TIMER_INDICATOR, set the IE "T314 expired" and the IE "T315 expired" to FALSE; [Hans: Style changed from B1 to B1]
  - if the stored values of the timer T314 and timer T315 are both equal to zero:
    - release all its radio resources;
    - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;

- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- enter idle mode;
- perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
- and the procedure ends.

- if the stored value of the timer T314 is equal to zero:
  - release all radio bearers, associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";
  - in the variable RB_TIMER_INDICATOR set the IE "T314 expired" to TRUE;
- if the stored value of the timer T315 is equal to zero:
  - release all radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315";
  - in the variable RB_TIMER_INDICATOR set the IE "T315 expired" to TRUE;
- if the stored value of the timer T314 is greater than zero:
  - ~~re-~~start timer T314;
- if the stored value of the timer T315 is greater than zero:
  - ~~re-~~start timer T315;
- for the released radio bearer(s):
  - delete the information about the radio bearer from the variable ESTABLISHED_RABS;
  - when all radio bearers belonging to the same radio access bearer have been released:
    - indicate local end release of the radio access bearer to upper layers using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED_RABS;
    - delete all information about the radio access bearer from the variable ESTABLISHED_RABS;
- set the variable ORDERED_RECONFIGURATION to FALSE;

- set the variables PROTOCOL_ERROR_INDICATOR, FAILURE_INDICATOR, UNSUPPORTED_CONFIGURATION and INVALID_CONFIGURATION to FALSE;
- set the variable CELL_UPDATE_STARTED to TRUE;
- move to CELL_FACH state, if not already in that state;
- if the UE performs cell re-selection:
  - clear the variable C_RNTI; and
  - stop using that C_RNTI just cleared from the variable C_RNTI in MAC;
- set CFN in relation to SFN of current cell according to subclause 8.5.15;
- in case of a cell update procedure:
  - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
- in case of a URA update procedure:
  - set the contents of the URA UPDATE message according to subclause 8.3.1.3;

- submit the URA UPDATE message for transmission on the uplink CCCH;

- set counter V302 to 1;

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

8.3.1.3 CELL UPDATE / URA UPDATE message contents to set

In case of cell update procedure the UE shall transmit a CELL UPDATE message.

In case of URA update procedure the UE shall transmit a URA UPDATE message.

The UE shall set the IEs in the CELL UPDATE message as follows:

- set the IE "Cell update cause" corresponding to the cause specified in subclause 8.3.1.2 that is valid when the CELL UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a cell update procedure is initiated by the UE until when the procedure ends, additional CELL UPDATE messages may be transmitted by the UE with different causes.

- set the IE "U-RNTI" to the value of the variable U_RNTI;

- if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE:

  - include the IE "RRC transaction identifier"; and

    - set it to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;

  - include and set the IE "failure cause" to the cause value "protocol error";

  - set the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION;

- if the value of the variable FAILURE_INDICATOR is TRUE:

  - include the IE "RRC transaction identifier"; and

    - set it to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;

  - include and set the IE "failure cause" to the value of the variable FAILURE_CAUSE;

- include the START values for each CN domain, calculated according to subclause 8.5.9;

- if an unrecoverable error [16] in any of the AM RLC entities for the signalling radio bearer RB2 or signalling radio bearer RB3 is detected:

  - set the IE "AM_RLC error indication (RB2 or RB3)" to TRUE;

- otherwise:

  - set the IE "AM_RLC error indication (RB2 or RB3)" to FALSE;

- if an unrecoverable error [16] in any of the AM RLC entities for the RB4 or upward is detected:

  - set the IE "AM_RLC error indication (RB>3)" to TRUE;

- otherwise:

  - set the IE "AM_RLC error indication (RB>3)" to FALSE;

- set the IE "RB Timer indicator" to the value of the variable RB_TIMER_INDICATOR;

- include an intra-frequency measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on

RACH" in system information block type 12 (or System Information Block type 11, if System Information Block type 12 is not being broadcast).

The UE shall set the IEs in the URA UPDATE message as follows:

- set the IE "U-RNTI" to the value of the variable U_RNTI;
- set the IE "URA update cause" corresponding to which cause as specified in subclause 8.3.1.2 that is valid when the URA UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a URA update procedure is initiated by the UE until when the procedure ends, additional URA UPDATE messages may be transmitted by the UE with different causes, depending on which causes are valid for the respective URA UPDATE message.

- if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE:
  - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - set the IE "Protocol error indicator" to TRUE;
  - include the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- if the value of the variable PROTOCOL_ERROR_INDICATOR is FALSE:
  - if the value of the variable INVALID_CONFIGURATION is TRUE:
    - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;
    - set the IE "Protocol error indicator" to TRUE;
    - include the IE "Protocol error information" set to "Information element value not comprehended";
  - if the value of the variable INVALID_CONFIGURATION is FALSE:
    - set the IE "Protocol error indicator" to FALSE.

8.3.1.4 T305 expiry and the UE detects "out of service area"

When the T305 expires and the UE detects that it is "out of service area" as specified in subclause 8.5.5.1, the UE shall

- start timer T307;
- re-select to a new cell, as described in [4].

8.3.1.4.1 Re-entering "in service area"

If the UE detects "in service area" according to subclause 8.5.5.2 and timer T307 or T317 is running, the UE shall:

- check the value of V302; and
- if V302 is equal to or smaller than N302:
  - in case of a cell update procedure:
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:

- set the contents of the URA UPDATE message according to subclause 8.3.1.3;
- submit the URA UPDATE message for transmission on the uplink CCCH;

- increment counter V302;
- restart timer T302 when the MAC layer indicates success or failure to transmit the message.

- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure:
    - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure:
    - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
  - and the procedure ends.

8.3.1.4.2 Expiry of timer T307

When the T307 expires, the UE shall:

- move to idle mode;
- release all dedicated resources;
- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
- and the procedure ends.

8.3.1.5 Reception of an CELL UPDATE/URA UPDATE message by the UTRAN

When the UTRAN receives a CELL UPDATE/URA UPDATE message, it may either:

- in case the procedure was triggered by reception of a CELL UPDATE:

- update the START value for each CN domain as maintained in UTRAN (refer to subclause 8.5.9) with "START" in the IE "START list" for the CN domain as indicated by "CN domain identity" in the IE "START list";
- if this procedure was triggered while the UE was not in CELL_DCH state, then for each CN domain as indicated by "CN domain identity" in the IE "START list":
  - set the 20 MSB of the MAC-d HFN with the corresponding START value in the IE "START list";
  - set the remaining LSB of the MAC-d HFN to zero;
- transmit a CELL UPDATE CONFIRM message on the downlink DCCH or optionally on the CCCH but only if ciphering is not required; and
- optionally include the IE "RLC re-establish indicator" to request a RLC re-establishment in the UE, in which case the corresponding RLC entities should also be re-established in UTRAN; or

- in case the procedure was triggered by reception of a URA UPDATE:
  - transmit a URA UPDATE CONFIRM message to the lower layers for transmission on the downlink CCCH or DCCH in which case the UTRAN should include the IE "URA identity" in the URA UPDATE CONFIRM message in a cell where multiple URA identifiers are broadcast; or
- initiate an RRC connection release procedure (see subclause 8.1.4) by transmitting an RRC CONNECTION RELEASE message on the downlink CCCH.

8.3.1.6 Reception of the CELL UPDATE CONFIRM/URA UPDATE CONFIRM message by the UE

When the UE receives a CELL UPDATE CONFIRM/URA UPDATE CONFIRM message; and

- if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U_RNTI, or;
- if the message is received on DCCH;

the UE shall:

- stop timer T302;
- ~~set the variable CELL_UPDATE_STARTED to FALSE;~~
- in case of a cell update procedure and the CELL UPDATE CONFIRM message:
  - includes "RB information elements"; and/or
  - includes "Transport channel information elements"; and/or
  - includes "Physical channel information elements"; and
  - if the variable ORDERED_RECONFIGURATION is set to FALSE:
    - set the variable ORDERED_RECONFIGURATION to TRUE;
- act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following:
  - use the transport channel(s) applicable for the physical channel types that is used; and
  - if the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s):
    - use the TFS given in system information.
  - if none of the TFS stored is compatible with the physical channel:
    - delete the stored TFS;

- use the TFS given in system information.

- perform the physical layer synchronisation procedure as specified in [29];

- if the CELL UPDATE CONFIRM message includes the IE "RLC re-establish indicator (RB2 and RB3)":

  - re-establish the RLC entities for signalling radio bearer RB2 and signalling radio bearer RB3;

  - if the variable CIPHERING_STATUS is set to "Started":

    - set the HFN values for AM RLC entities with RB identity 2 and 3 equal to the START value included in the latest transmitted CELL UPDATE message for the CN domain stored in the variable LATEST_CONFIGURED_CN_DOMAIN;

- if the CELL UPDATE CONFIRM message includes the IE "RLC re-establish indicator (RB>3)":

  - re-establish the AM RLC entities for RB with RB identity equal to or larger than 4;

  - if the variable CIPHERING_STATUS is set to "Started":

    - set the HFN values for AM RLC entities with RB identity equal to or larger than 4 equal to the START value included in the latest transmitted CELL UPDATE message for the CN domain stored in the variable LATEST_CONFIGURED_CN_DOMAIN;

- enter a state according to subclause 8.6.3.3 applied on the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message.

If the UE after state transition enters CELL_DCH state, it shall:

- not prohibit periodical status transmission in RLC.

If the UE after state transition remains in CELL_FACH state, it shall

- start the timer T305 using its initial value if timer T305 is not running and periodical cell update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity";

- select PRACH according to subclause 8.5.17;

- select Secondary CCPCH according to subclause 8.5.19;

- not prohibit periodical status transmission in RLC;

- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

  - ignore that IE and stop using DRX;

If the UE after state transition enters URA_PCH or CELL_PCH state, it shall

- prohibit periodical status transmission in RLC;

- clear the variable C_RNTI;

- stop using that C_RNTI just cleared from the variable C_RNTI in MAC;

- start the timer T305 using its initial value if timer T305 is not running and periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity";

- select Secondary CCPCH according to subclause 8.5.19;

- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

  - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging Occasion and PICH Monitoring Occasion as specified in 8.6.3.2 in CELL_PCH state.

If the UE after the state transition remains in CELL_FACH state and;

- the contents of the variable C_RNTI are empty;

it shall check the value of V302 and

- If V302 is equal to or smaller than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message,
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
        - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a URA update procedure:
    - stop the URA update procedure; and
    - continue with a cell update procedure;
  - set the contents of the CELL UPDATE message according to subclause 8.3.1.3, except for the IE "Cell update cause" which shall be set to "cell reselection";
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- If V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure:
    - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure:
    - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;

- other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;

- and the procedure ends.

If the UE after the state transition remains in CELL_FACH state and

- a C-RNTI is stored in the variable C_RNTI;

or

the UE after the state transition moves to another state than the CELL_FACH state;

the UE shall:

- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE "Ciphering mode info":

  - include and set the IE "Radio bearer uplink ciphering activation time info" in any response message transmitted below to the value of the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.

- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE "Integrity protection mode info" with the IE "Integrity protection mode command" set to "Modify":

  - include and set the IE "Integrity protection activation info" in any response message transmitted below to the value of the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

- in case of a cell update procedure:

  - set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and

  - clear that entry.

- in case of a cell update procedure:

  - set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and

  - clear that entry;

- if the variable PDCP_SN_INFO is non-empty:

  - include the IE "RB with PDCP information list" in any response message transmitted below and set it to the value of the variable PDCP_SN_INFO;

- if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message included the IE "Downlink counter synchronisation info":

  - calculate the START value according to subclause 8.5.9;

  - include the calculated START values for each CN domain in the IE "START list" in the IE "Uplink counter synchronisation info" in any response message transmitted below;

- transmit a response message as specified in subclause 8.3.1.7;

- if the IE "Integrity protection mode info" was present in the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message:

  - start applying the new integrity protection configuration in the uplink for signalling radio bearer RB2 from and including the transmitted response message;

- clear the variable PDCP_SN_INFO;

- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
  - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
  - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- in case of a cell update procedure:
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
- in case of a URA update procedure:
  - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
- set the variable CELL_UPDATE_STARTED to FALSE;

The procedure ends.

8.3.1.7 Transmission of a response message to UTRAN

If the CELL UPDATE CONFIRM message

- includes the IE "RB information to release list":

the UE shall:

- transmit a RADIO BEARER RELEASE COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include the IE "RB information to release list"; and
- includes the IE "RB information to reconfigure list "; or
- includes the IE "RB information to be affected list ":

the UE shall:

- transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- includes "Transport channel information elements":

the UE shall:

- transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- includes "Physical channel information elements":

the UE shall:

- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and
- does not include the IE "New C-RNTI"; and
- does not include the IE "New U-RNTI":

the UE shall:

- transmit no response message.

If the URA UPDATE CONFIRM message

- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes any one or both of the IEs "New C-RNTI" and "New U-RNTI":

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the URA UPDATE CONFIRM message

- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and

- does not include the IE "New U-RNTI"; and
- does not include the IE "New C-RNTI":

the UE shall:

- transmit no response message.

If the new state is CELL_DCH or CELL_FACH, the response message shall be transmitted using the new configuration after the state transition., and the UE shall:

- if the variable PDCP_SN_INFO is empty:
  - if the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
    - when RLC has confirmed the successful transmission of the response message:
      - continue with the remainder of the procedure;
  - if the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message did not contain the IE "Ciphering mode info":
    - when RLC has been requested to transmit the response message,
      - continue with the remainder of the procedure;
- if the variable PDCP_SN_INFO non-empty:
  - when RLC has confirmed the successful transmission of the response message:
    - for each radio bearer in the variable PDCP_SN_INFO:
      - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
        - configure the RLC entity for that radio bearer to "continue";
    - continue with the remainder of the procedure;

If the new state is CELL_PCH or URA_PCH, the response message shall be transmitted in CELL_FACH state, and the UE shall:

- when RLC has confirmed the successful transmission of the response message:
  - for each radio bearer in the variable PDCP_SN_INFO:
    - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
      - configure the RLC entity for that radio bearer to "continue";
  - enter the new state (CELL_PCH or URA_PCH, respectively);
- continue with the remainder of the procedure.

8.3.1.7a Physical channel failure

If the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message would cause the UE to transit to CELL_DCH state; and

- in case of a received CELL UPDATE CONFIRM message:
  - if the UE failed to establish the physical channel(s) indicated in the received CELL UPDATE CONFIRM message according to the criteria defined in subclause 8.5.4 are not fulfilled; or
  - the received CELL UPDATE CONFIRM message does not contain dedicated physical channels;
- in case of the UE received a URA UPDATE CONFIRM message:

the UE shall:

- if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
  - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
  - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
    - abort the ongoing integrity and/or ciphering reconfiguration;
    - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
      - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
      - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
    - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
      - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
      - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- if V302 is equal to or smaller than N302:
  - in case of a URA update procedure:
    - stop the URA update procedure; and
    - continue with a cell update procedure;
  - select a suitable UTRA cell according to [4];
  - set the contents of the CELL UPDATE message according to subclause 8.3.1.3, except for the IE "Cell update cause" which shall be set to "Radio link failure";
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure:
    - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure:
    - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;

- set the variable CELL_UPDATE_STARTED to FALSE;
- enter idle mode.

8.3.1.8 Unsupported configuration by the UE

If the UE does not support the configuration in the CELL UPDATE CONFIRM message and/or the variable UNSUPPORTED_CONFIGURATION is set to TRUE, the UE shall:

- if V302 is equal to or smaller than N302, the UE shall:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
        - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - set the variable FAILURE_INDICATOR to TRUE;
  - set the variable FAILURE_CAUSE to "Unsupported configuration";
  - set the content of the CELL UPDATE message according to subclause 8.3.1.3;
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - set the variable CELL_UPDATE_STARTED to FALSE;

- enter idle mode;
- Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
- and the procedure ends.

8.3.1.9 Invalid configuration

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

- if V302 is equal to or smaller than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info";
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
        - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure:
    - set the variable FAILURE_INDICATOR to TRUE;
    - set the variable FAILURE_CAUSE to "Invalid configuration";
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:
    - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
    - submit the URA UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;

- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- set the variable CELL_UPDATE_STARTED to FALSE;
- enter idle mode;
- Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
- the procedure ends.

8.3.1.9a Incompatible simultaneous reconfiguration

In case of a cell update procedure and if the received CELL UPDATE CONFIRM message

- includes "RB information elements"; and/or
- includes "Transport channel information elements"; and/or
- includes "Physical channel information elements"; and
- the variable ORDERED_RECONFIGURATION is set to TRUE because of an ongoing Reconfiguration procedure;

and/or

- if the variable INCOMPATIBLE_SECURITY_RECONFIGURATION becomes set to TRUE of the received CELL UPDATE CONFIRM message:

the UE shall:

- if V302 is equal to or smaller than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
        - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - set the variable FAILURE_INDICATOR to TRUE;
  - set the variable FAILURE_CAUSE to "Incompatible simultaneous reconfiguration";
  - set the content of the CELL UPDATE message according to subclause 8.3.1.3;

- submit the CELL UPDATE message for transmission on the uplink CCCH;
- increment counter V302;
- restart timer T302 when the MAC layer indicates success or failure to transmit the message;

- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - enter idle mode;
  - Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
  - the procedure ends.

8.3.1.10 Confirmation error of URA ID list

If the URA UPDATE CONFIRM message causes a confirmation error of URA identity list as specified in subclause 8.6.2.1 the UE shall:

- check the value of V302; and
- if V302 is smaller or equal than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info"
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and

- clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

- set the IEs in the URA UPDATE message according to subclause 8.3.1.3;
- submit the URA UPDATE message for transmission on the uplink CCCH;
- increment counter V302;
- restart timer T302 when the MAC layer indicates success or failure to transmit the message;

- if V302 is greater than N302:
  - release all its radio resources;
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - enter idle mode;
  - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
  - the procedure ends.

8.3.1.11 Invalid CELL UPDATE CONFIRM/URA UPDATE CONFIRM message

If the UE receives an CELL UPDATE CONFIRM/URA UPDATE CONFIRM 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 as follows:

- If V302 is equal to or smaller than N302, the UE shall:
  - set the variable PROTOCOL_ERROR_INDICATOR to TRUE;
  - in case of a cell update procedure:
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:
    - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
    - submit the URA UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - in case of a cell update procedure:

- clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;

- in case of a URA update procedure:

  - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;

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

- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;

- clear the variable ESTABLISHED_RABS;

- set the variable CELL_UPDATE_STARTED to FALSE;

- release all its radio resources;

- enter idle mode;

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

- the procedure ends.

8.3.1.12 T302 expiry or cell reselection

If any or several of the following conditions are true:

- expiry of timer T302;

- reselection to another UTRA cell (including the previously serving cell) before completion of the cell update or URA update procedure;

the UE shall:

- stop T302 if it is running;

- if the UE was in CELL_DCH state prior to the initiation of the procedure; and

  - if timers T314 and T315 have elapsed while T302 was running:

    - enter idle mode.

    - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers. Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2.

    - and the procedure ends.

    - if timer T314 has elapsed while T302 was running and,

      - if "T314 expired" in the variable RB_TIMER_INDICATOR is set to FALSE and

      - if T315 is still running:

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

        - indicate release of those radio access bearers to upper layers;

        - delete all information about those radio access bearers from the variable ESTABLISHED_RABS;

        - set "T314 expired" in the variable RB_TIMER_INDICATOR to TRUE;

- if timer T315 has elapsed while T302 was running and,
  - if "T315 expired" in the variable RB_TIMER_INDICATOR is set to FALSE and,
  - if T314 is still running:
    - release locally all radio bearers which are associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315";
    - indicate release of those radio access bearers to upper layers;
    - delete all information about those radio access bearers from the variable ESTABLISHED_RABS;
    - set "T315 expired" in the variable RB_TIMER_INDICATOR to TRUE;

- check whether it is still in "in service area" (see subclause 8.5.5.2);
- if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE and/or the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
  - abort the ongoing integrity and/or ciphering reconfiguration;
  - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
    - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
    - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
    - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
    - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- in case of a cell update procedure:
  - clear any entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;
- in case of a URA update procedure:
  - clear any entry for the URA UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;

If the UE detects "in service area" if it has not entered idle mode, and:

- if V302 is equal to or smaller than N302, the UE shall:
  - if the UE performed cell re-selection:
    - delete its C-RNTI;
  - in case of a cell update procedure:
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:
    - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
    - submit the URA UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;

- restart timer T302 when the MAC layer indicates success or failure to transmit the message;

- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - in case of a cell update procedure:
    - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure:
    - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
  - and the procedure ends.

If the UE does not detect "in service area", it shall:

- continue searching for "in service area".

8.3.1.13 T314 expiry

Upon expiry of timer T314 the UE shall:

- if timer T302 is running:
  - continue awaiting response message from UTRAN;
- if timer T302 is not running and timer T315 is running:
  - set IE "T314 expired" in variable RB_TIMER_INDICATOR to TRUE;
  - release locally all radio bearers which are associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";
  - indicate release of those radio access bearers to upper layers;
  - delete all information about those radio access bearers from the variable ESTABLISHED_RABS;
- if timers T302 and T315 are not running:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

- clear the variable PDCP_SN_INFO;
- clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
- release all its radio resources;
- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- set the variable CELL_UPDATE_STARTED to FALSE;
- enter idle mode;
- other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
- and the procedure ends.

8.3.1.14 T315 expiry

Upon expiry of timer T315 the UE shall:

- if timer T302 is running:
  - continue awaiting response message from UTRAN;
- if timer T302 is not running and timer T314 is running:
  - set IE "T315 expired" in variable RB_TIMER_INDICATOR to TRUE;
  - release locally all radio bearers which are associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "use T315";
  - indicate release of those radio access bearers to upper layers;
  - delete all information about those radio access bearers from the variable ESTABLISHED_RABS;
- if timers T302 and T314 are not running:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - enter idle mode;

- other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;

- and the procedure ends.

8.3.1.15 Reception of the UTRAN MOBILITY INFORMATION CONFIRM message by the UTRAN

See subclause 8.3.3.4.

8.3.2 URA update

See subclause 8.3.1.

10.3.3.46 URA update cause

Indicates the cause for s URA update.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
URA update cause	MP		Enumerated(change of URA, periodic URA update~~, re-entered service area~~)	At least one spare value needed.

```
URA-UpdateCause ::=                 ENUMERATED {
                                        changeOfURA,
                                        periodicURAUpdate,
                                        re-enteredServiceAreadummy,
                                        spare1 }
```

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th-31st August 2001

Tdoc r2-012100

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 992** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

*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 cell update procedures
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	15/08/2001
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: ⌘

1 - ~~Section 8.3.1.2 defines cell and URA update causes to be used in different scenarios. Only the URA update causes 'URA reselection' and 'Periodic URA update' are described. This is inconsistant with URA update message which includes a cause value 're-entering service area' and section 8.3.1.4.1 which specifies that the ura update message is also sent when re-entering service area.~~

The URA update message includes a cause value 're-entering service area' that according to the procedural text is never used. (A UE never initiates a URA update procedure with the cause 're-entering service area'. When the UE has an ongoing URA update procedure and re-enters service area, it will transmit a URA update message but in this situation the cause value will be 'reselection' or 'periodic update' depending on the cause that initiated the procedure.)

2 - Section 8.3.1.3 states that the UE shall send a Cell update with the cause value that is valid at the time that the message is submitted to lower layers for transmission. This means that the cause value in a retransmission of a Cell update may be different from that in the original message.

If the original Cell Update message is triggered due to a 'radio link failure', and the UE is moving in and out of service area, it is possible that a retransmission of the message could have the cause value 're-entering service area' (as 're-entering service area' is a higher priority cause than 'radio link failure'). This could lead the network into taking an incorrect action when it successfully receives one of the retransmissions - the network may not re-establish the dedicated channel as requested by orignal Cell Update with cause 'radio link failure'

3 - If a reconfiguration procedure fails due to a physical channel establishment failure, the UE initiates a cell update procedure with the cause value 'radio link failure'. However, the variable ORDERED RECONFIGURATION will be TRUE due to the failed reconfiguration procedure and so the UTRAN is unable to use

	the Cell Update Confirm message in order to re-establish the dedicated channel. This problem also arises if the there is a radio link failure during a reconfiguration procedure. 4 - Section 8.3.1.2 states 're-start timer T314/T315' when the timer has not previously been started. 5 - The variable CELL_UPDATE_STARTED is set to TRUE when the cell or URA update procedure is initaited. The variable is checked when a reconfiguration message is received in order to prevent initiation of a reconfiguration procedure whilst a cell update is ongoing. However, the variable is not set to FALSE at the very end of the procedure but after the first Cell Update Confirm message is received. If the procedure consists of several Cell Update and Cell Update Confirm messages then the variable will be incorrectly set for part of the procedure, allowing a conflicting reconfiguration procedure to be accepted. 6
Summary of change: ⌘	1 - ~~The URA update cause re-entering service area is added to the list of causes in section 8.3.1.2.~~ The un-used cause value is removed from the tabular description and changed to dummy in the ASN.1 2 - The 'radio link failure' cause value is moved up the priority order so that the scenario descibed above can not occur. Retransmissions of the cell update message will always use the 'radio link failure' cause value. 3 - In the case of a cell update procedure is triggered by a UE due to radio link failure or a physical channel establishment failure during an ongoing reconfiguration procedure, the configuration requested by the network is redundant and can be discarded by the UE. Therefore, it is porposed that the variable ORDERED RECONFIGURATION is set to FALSE before initiating a cell update with cause 'radio link failure'. This enables the UTRAN to include configuration parameters in the cell update confirm. 4 - 're-' is removed to clarify that the timer has been previously started. 5 - The variable CELL_UPDATE_STARTED is only set to false at the end of the procedure. **Isolated impact analysis:** Corrected functionality: Cell update and URA update procedures 1, - Correction to a function where the specification contained some contradictions. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise 4 - Correction to a function where the specification was not sufficiently explicit. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise
Consequences if not approved: ⌘	The specification would still have functions that contain contradictions, are ambiguous or insufficiently explicit.

Clauses affected: ⌘	8.3.1.2, 8.3.1.6, 8.3.1.7a, 8.3.1.8, 8.3.1.9, 8.3.1.9a, 8.3.1.10, 8.3.1.11, 8.3.1.12, 8.3.1.13, 8.3.1.14, 10.3.3.46, 11

Other specs affected:	⌘		Other core specifications Test specifications O&M Specifications	⌘	25.331 v3.7.0, CR 991r1
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. ⌘

8.3 RRC connection mobility procedures

8.3.1 Cell and URA update procedures

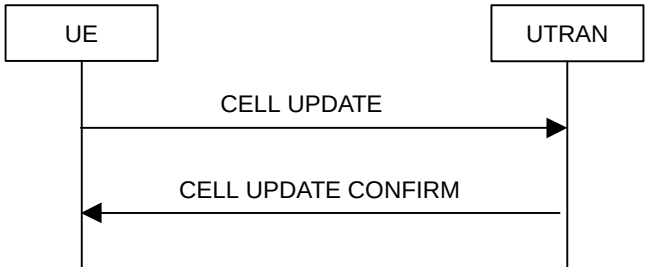

Figure 38: Cell update procedure, basic flow

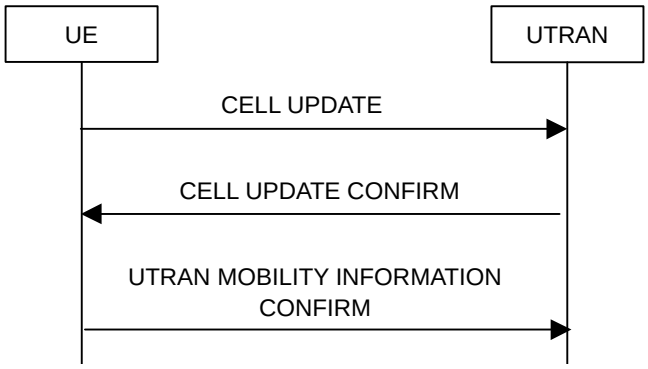

Figure 39: Cell update procedure with update of UTRAN mobility information

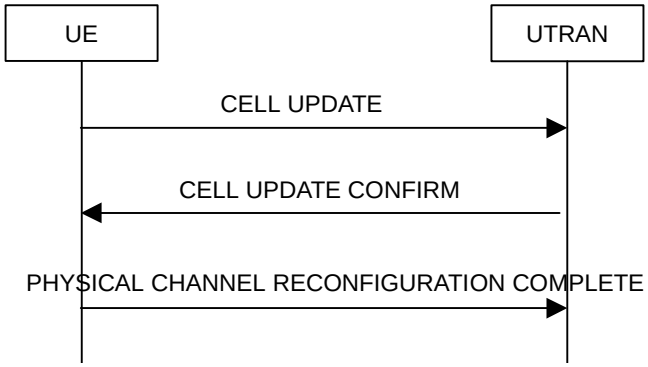

Figure 40: Cell update procedure with physical channel reconfiguration

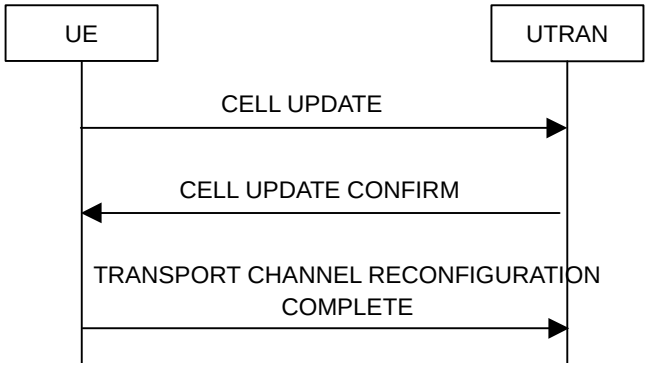

Figure 41: Cell update procedure with transport channel reconfiguration

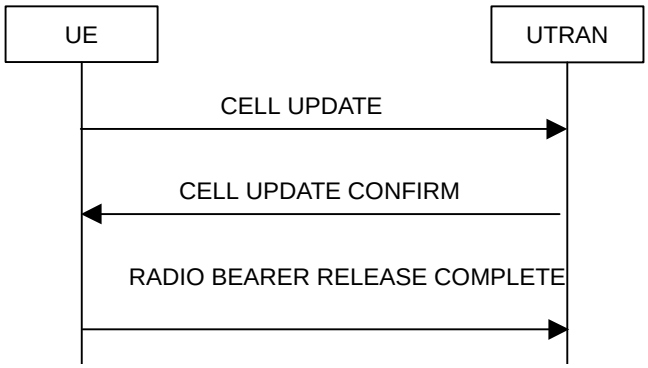

Figure 42: Cell update procedure with radio bearer release

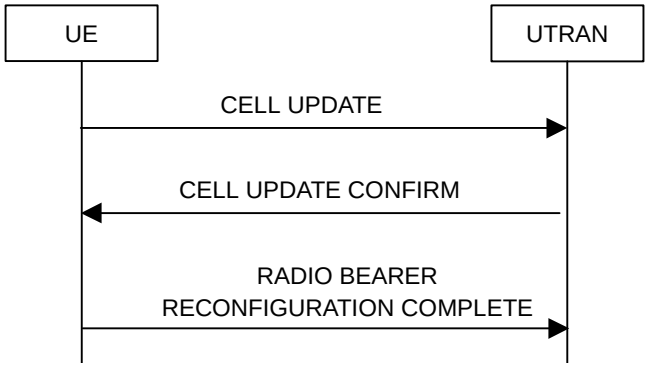

Figure 43: Cell update procedure with radio bearer reconfiguration

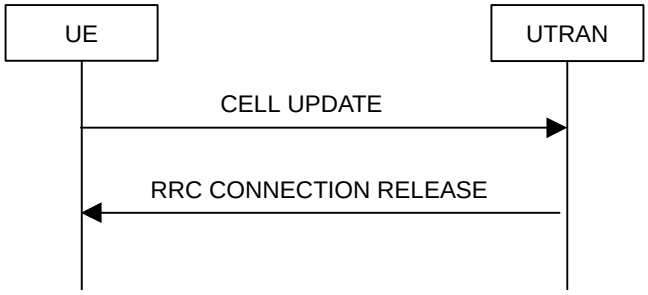

Figure 44: Cell update procedure, failure case

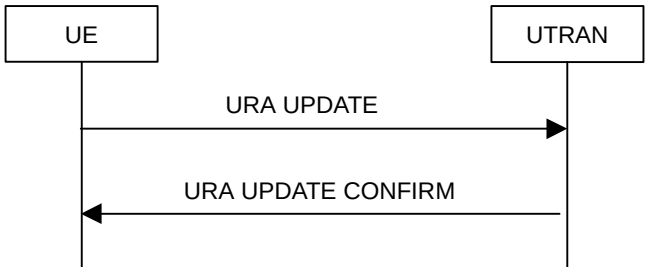

Figure 45: URA update procedure, basic flow

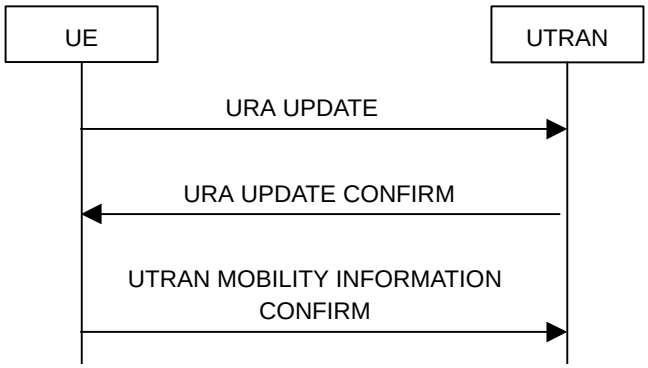

Figure 46: URA update procedure with update of UTRAN mobility information

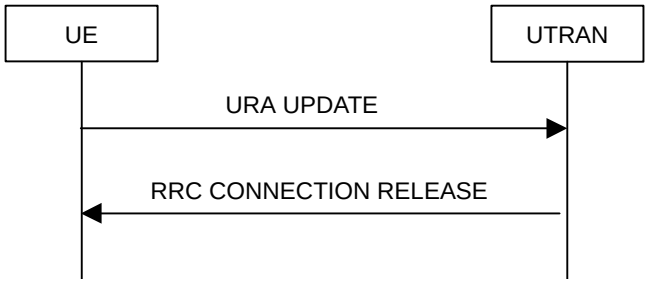

Figure 47: URA update procedure, failure case

8.3.1.1 General

The URA update and cell update procedures serve several main purposes:

- to notify UTRAN after re-entering service area in the URA_PCH or CELL_PCH state;
- to notify UTRAN of an RLC unrecoverable error [16] on an AM RLC entity;
- to be used as a supervision mechanism in the CELL_FACH, CELL_PCH, or URA_PCH state by means of periodical update;

In addition, the URA update procedure also serves the following purpose:

- to retrieve a new URA identity after cell re-selection to a cell not belonging to the current URA assigned to the UE in URA_PCH state;

In addition, the cell update procedure also serves the following purposes:

- to update UTRAN with the current cell the UE is camping on after cell reselection;
- to act on a radio link failure in the CELL_DCH state;
- when triggered in the URA_PCH or CELL_PCH state, to notify UTRAN of a transition to the CELL_FACH state due to the reception of UTRAN originated paging or due to a request to transmit uplink data.

The URA update and cell update procedures may:

- include an update of mobility related information in the UE;
- cause a state transition from the CELL_FACH state to the CELL_DCH, CELL_PCH or URA_PCH states or idle mode.

The cell update procedure may also include:

- a re-establish of AM RLC entities;

- a radio bearer release, radio bearer reconfiguration, transport channel reconfiguration or physical channel reconfiguration;

8.3.1.2 Initiation

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

- Uplink data transmission:
  - if the UE is in URA_PCH or CELL_PCH state; and
  - if the UE has uplink RLC data PDU or uplink RLC control PDU on RB1 or upwards to transmit:
    - perform cell update using the cause "uplink data transmission".
- Paging response:
  - if the criteria for performing cell update with the cause specified above in the current subclause is not met; and
  - if the UE in URA_PCH or CELL_PCH state, receives a PAGING TYPE 1 message fulfilling the conditions for initiating a cell update procedure specified in subclause 8.1.2.3:
    - perform cell update using the cause "paging response".
- Radio link failure:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_DCH state; and
  - if the criteria for radio link failure is met as specified in subclause 8.5.6:
    - perform cell update using the cause "radio link failure".
- Re-entering service area:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the UE has been out of service area and re-enters service area before T307 or T317 expires:
    - perform cell update using the cause "re-entering service area".
- ~~Radio link failure:~~
  - ~~if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and~~
  - ~~if the UE is in CELL_DCH state; and~~
  - ~~if the criteria for radio link failure is met as specified in subclause 8.5.6:~~
    - ~~perform cell update using the cause "radio link failure".~~
- RLC unrecoverable error:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE detects RLC unrecoverable error [16] in an AM RLC entity:
    - perform cell update using the cause "RLC unrecoverable error".

- Cell reselection:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the UE performs cell re-selection or the variable C_RNTI is empty:
    - perform cell update using the cause "cell reselection".
- Periodical cell update:
  - if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
  - if the UE is in CELL_FACH or CELL_PCH state; and
  - if the timer T305 expires; and
  - if the criteria for "in service area" as specified in subclause 8.5.5.2 is fulfilled; and
  - if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":
    - perform cell update using the cause "periodical cell update".

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

- URA reselection:
  - if the UE detects that the current URA assigned to the UE, stored in the variable URA_IDENTITY, is not present in the list of URA identities in system information block type 2; or
  - if the list of URA identities in system information block type 2 is empty; or
  - if the system information block type 2 can not be found:
    - perform URA update using the cause "change of URA".
- Periodic URA update:
  - if the criteria for performing URA update with the causes as specified above in the current subclause are not met; and
  - if the timer T305 expires while the UE is in the service area; and
  - if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":
    - perform URA update using the cause "periodic URA update".

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

- stop timer T305;
- if the UE is in CELL_DCH state:
  - in the variable RB_TIMER_INDICATOR, set the IE "T314 expired" and the IE "T315 expired" to FALSE; [Hans: Style changed from B1 to B1]
  - if the stored values of the timer T314 and timer T315 are both equal to zero:
    - release all its radio resources;
    - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;

- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- enter idle mode;
- perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
- and the procedure ends.

- if the stored value of the timer T314 is equal to zero:
  - release all radio bearers, associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";
  - in the variable RB_TIMER_INDICATOR set the IE "T314 expired" to TRUE;
- if the stored value of the timer T315 is equal to zero:
  - release all radio bearers associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315";
  - in the variable RB_TIMER_INDICATOR set the IE "T315 expired" to TRUE;
- if the stored value of the timer T314 is greater than zero:
  - ~~re-~~start timer T314;
- if the stored value of the timer T315 is greater than zero:
  - ~~re-~~start timer T315;
- for the released radio bearer(s):
  - delete the information about the radio bearer from the variable ESTABLISHED_RABS;
  - when all radio bearers belonging to the same radio access bearer have been released:
    - indicate local end release of the radio access bearer to upper layers using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED_RABS;
    - delete all information about the radio access bearer from the variable ESTABLISHED_RABS;
- set the variable ORDERED_RECONFIGURATION to FALSE;

- set the variables PROTOCOL_ERROR_INDICATOR, FAILURE_INDICATOR, UNSUPPORTED_CONFIGURATION and INVALID_CONFIGURATION to FALSE;
- set the variable CELL_UPDATE_STARTED to TRUE;
- move to CELL_FACH state, if not already in that state;
- if the UE performs cell re-selection:
  - clear the variable C_RNTI; and
  - stop using that C_RNTI just cleared from the variable C_RNTI in MAC;
- set CFN in relation to SFN of current cell according to subclause 8.5.15;
- in case of a cell update procedure:
  - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
- in case of a URA update procedure:
  - set the contents of the URA UPDATE message according to subclause 8.3.1.3;

- submit the URA UPDATE message for transmission on the uplink CCCH;

- set counter V302 to 1;

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

8.3.1.3 CELL UPDATE / URA UPDATE message contents to set

In case of cell update procedure the UE shall transmit a CELL UPDATE message.

In case of URA update procedure the UE shall transmit a URA UPDATE message.

The UE shall set the IEs in the CELL UPDATE message as follows:

- set the IE "Cell update cause" corresponding to the cause specified in subclause 8.3.1.2 that is valid when the CELL UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a cell update procedure is initiated by the UE until when the procedure ends, additional CELL UPDATE messages may be transmitted by the UE with different causes.

- set the IE "U-RNTI" to the value of the variable U_RNTI;

- if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE:

  - include the IE "RRC transaction identifier"; and

    - set it to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;

  - include and set the IE "failure cause" to the cause value "protocol error";

  - set the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION;

- if the value of the variable FAILURE_INDICATOR is TRUE:

  - include the IE "RRC transaction identifier"; and

    - set it to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;

  - include and set the IE "failure cause" to the value of the variable FAILURE_CAUSE;

- include the START values for each CN domain, calculated according to subclause 8.5.9;

- if an unrecoverable error [16] in any of the AM RLC entities for the signalling radio bearer RB2 or signalling radio bearer RB3 is detected:

  - set the IE "AM_RLC error indication (RB2 or RB3)" to TRUE;

- otherwise:

  - set the IE "AM_RLC error indication (RB2 or RB3)" to FALSE;

- if an unrecoverable error [16] in any of the AM RLC entities for the RB4 or upward is detected:

  - set the IE "AM_RLC error indication (RB>3)" to TRUE;

- otherwise:

  - set the IE "AM_RLC error indication (RB>3)" to FALSE;

- set the IE "RB Timer indicator" to the value of the variable RB_TIMER_INDICATOR;

- include an intra-frequency measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on

RACH" in system information block type 12 (or System Information Block type 11, if System Information Block type 12 is not being broadcast).

The UE shall set the IEs in the URA UPDATE message as follows:

- set the IE "U-RNTI" to the value of the variable U_RNTI;
- set the IE "URA update cause" corresponding to which cause as specified in subclause 8.3.1.2 that is valid when the URA UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a URA update procedure is initiated by the UE until when the procedure ends, additional URA UPDATE messages may be transmitted by the UE with different causes, depending on which causes are valid for the respective URA UPDATE message.

- if the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE:
  - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - set the IE "Protocol error indicator" to TRUE;
  - include the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- if the value of the variable PROTOCOL_ERROR_INDICATOR is FALSE:
  - if the value of the variable INVALID_CONFIGURATION is TRUE:
    - include the IE "RRC transaction identifier"; and
    - set it to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;
    - set the IE "Protocol error indicator" to TRUE;
    - include the IE "Protocol error information" set to "Information element value not comprehended";
  - if the value of the variable INVALID_CONFIGURATION is FALSE:
    - set the IE "Protocol error indicator" to FALSE.

8.3.1.4 T305 expiry and the UE detects "out of service area"

When the T305 expires and the UE detects that it is "out of service area" as specified in subclause 8.5.5.1, the UE shall

- start timer T307;
- re-select to a new cell, as described in [4].

8.3.1.4.1 Re-entering "in service area"

If the UE detects "in service area" according to subclause 8.5.5.2 and timer T307 or T317 is running, the UE shall:

- check the value of V302; and
- if V302 is equal to or smaller than N302:
  - in case of a cell update procedure:
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:

- set the contents of the URA UPDATE message according to subclause 8.3.1.3;
- submit the URA UPDATE message for transmission on the uplink CCCH;

- increment counter V302;
- restart timer T302 when the MAC layer indicates success or failure to transmit the message.

- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure:
    - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure:
    - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
  - and the procedure ends.

8.3.1.4.2 Expiry of timer T307

When the T307 expires, the UE shall:

- move to idle mode;
- release all dedicated resources;
- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2;
- and the procedure ends.

8.3.1.5 Reception of an CELL UPDATE/URA UPDATE message by the UTRAN

When the UTRAN receives a CELL UPDATE/URA UPDATE message, it may either:

- in case the procedure was triggered by reception of a CELL UPDATE:

- update the START value for each CN domain as maintained in UTRAN (refer to subclause 8.5.9) with "START" in the IE "START list" for the CN domain as indicated by "CN domain identity" in the IE "START list";
- if this procedure was triggered while the UE was not in CELL_DCH state, then for each CN domain as indicated by "CN domain identity" in the IE "START list":
  - set the 20 MSB of the MAC-d HFN with the corresponding START value in the IE "START list";
  - set the remaining LSB of the MAC-d HFN to zero;
- transmit a CELL UPDATE CONFIRM message on the downlink DCCH or optionally on the CCCH but only if ciphering is not required; and
- optionally include the IE "RLC re-establish indicator" to request a RLC re-establishment in the UE, in which case the corresponding RLC entities should also be re-established in UTRAN; or

- in case the procedure was triggered by reception of a URA UPDATE:
  - transmit a URA UPDATE CONFIRM message to the lower layers for transmission on the downlink CCCH or DCCH in which case the UTRAN should include the IE "URA identity" in the URA UPDATE CONFIRM message in a cell where multiple URA identifiers are broadcast; or
- initiate an RRC connection release procedure (see subclause 8.1.4) by transmitting an RRC CONNECTION RELEASE message on the downlink CCCH.

8.3.1.6 Reception of the CELL UPDATE CONFIRM/URA UPDATE CONFIRM message by the UE

When the UE receives a CELL UPDATE CONFIRM/URA UPDATE CONFIRM message; and

- if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U_RNTI, or;
- if the message is received on DCCH;

the UE shall:

- stop timer T302;
- ~~set the variable CELL_UPDATE_STARTED to FALSE;~~
- in case of a cell update procedure and the CELL UPDATE CONFIRM message:
  - includes "RB information elements"; and/or
  - includes "Transport channel information elements"; and/or
  - includes "Physical channel information elements"; and
  - if the variable ORDERED_RECONFIGURATION is set to FALSE:
    - set the variable ORDERED_RECONFIGURATION to TRUE;
- act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following:
  - use the transport channel(s) applicable for the physical channel types that is used; and
  - if the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s):
    - use the TFS given in system information.
  - if none of the TFS stored is compatible with the physical channel:
    - delete the stored TFS;

- use the TFS given in system information.

- perform the physical layer synchronisation procedure as specified in [29];

- if the CELL UPDATE CONFIRM message includes the IE "RLC re-establish indicator (RB2 and RB3)":

  - re-establish the RLC entities for signalling radio bearer RB2 and signalling radio bearer RB3;

  - if the variable CIPHERING_STATUS is set to "Started":

    - set the HFN values for AM RLC entities with RB identity 2 and 3 equal to the START value included in the latest transmitted CELL UPDATE message for the CN domain stored in the variable LATEST_CONFIGURED_CN_DOMAIN;

- if the CELL UPDATE CONFIRM message includes the IE "RLC re-establish indicator (RB>3)":

  - re-establish the AM RLC entities for RB with RB identity equal to or larger than 4;

  - if the variable CIPHERING_STATUS is set to "Started":

    - set the HFN values for AM RLC entities with RB identity equal to or larger than 4 equal to the START value included in the latest transmitted CELL UPDATE message for the CN domain stored in the variable LATEST_CONFIGURED_CN_DOMAIN;

- enter a state according to subclause 8.6.3.3 applied on the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message.

If the UE after state transition enters CELL_DCH state, it shall:

- not prohibit periodical status transmission in RLC.

If the UE after state transition remains in CELL_FACH state, it shall

- start the timer T305 using its initial value if timer T305 is not running and periodical cell update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity";

- select PRACH according to subclause 8.5.17;

- select Secondary CCPCH according to subclause 8.5.19;

- not prohibit periodical status transmission in RLC;

- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

  - ignore that IE and stop using DRX;

If the UE after state transition enters URA_PCH or CELL_PCH state, it shall

- prohibit periodical status transmission in RLC;

- clear the variable C_RNTI;

- stop using that C_RNTI just cleared from the variable C_RNTI in MAC;

- start the timer T305 using its initial value if timer T305 is not running and periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity";

- select Secondary CCPCH according to subclause 8.5.19;

- if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

  - use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging Occasion and PICH Monitoring Occasion as specified in 8.6.3.2 in CELL_PCH state.

If the UE after the state transition remains in CELL_FACH state and;

- the contents of the variable C_RNTI are empty;

it shall check the value of V302 and

- If V302 is equal to or smaller than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message,
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
        - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a URA update procedure:
    - stop the URA update procedure; and
    - continue with a cell update procedure;
  - set the contents of the CELL UPDATE message according to subclause 8.3.1.3, except for the IE "Cell update cause" which shall be set to "cell reselection";
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- If V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure:
    - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure:
    - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;

- other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;

- and the procedure ends.

If the UE after the state transition remains in CELL_FACH state and

- a C-RNTI is stored in the variable C_RNTI;

or

the UE after the state transition moves to another state than the CELL_FACH state;

the UE shall:

- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE "Ciphering mode info":

  - include and set the IE "Radio bearer uplink ciphering activation time info" in any response message transmitted below to the value of the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.

- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE "Integrity protection mode info" with the IE "Integrity protection mode command" set to "Modify":

  - include and set the IE "Integrity protection activation info" in any response message transmitted below to the value of the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

- in case of a cell update procedure:

  - set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and

  - clear that entry.

- in case of a cell update procedure:

  - set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the URA UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and

  - clear that entry;

- if the variable PDCP_SN_INFO is non-empty:

  - include the IE "RB with PDCP information list" in any response message transmitted below and set it to the value of the variable PDCP_SN_INFO;

- if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message included the IE "Downlink counter synchronisation info":

  - calculate the START value according to subclause 8.5.9;

  - include the calculated START values for each CN domain in the IE "START list" in the IE "Uplink counter synchronisation info" in any response message transmitted below;

- transmit a response message as specified in subclause 8.3.1.7;

- if the IE "Integrity protection mode info" was present in the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message:

  - start applying the new integrity protection configuration in the uplink for signalling radio bearer RB2 from and including the transmitted response message;

- clear the variable PDCP_SN_INFO;

- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
  - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
- if the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
  - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- in case of a cell update procedure:
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
- in case of a URA update procedure:
  - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
- set the variable CELL_UPDATE_STARTED to FALSE;

The procedure ends.

8.3.1.7 Transmission of a response message to UTRAN

If the CELL UPDATE CONFIRM message

- includes the IE "RB information to release list":

the UE shall:

- transmit a RADIO BEARER RELEASE COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include the IE "RB information to release list"; and
- includes the IE "RB information to reconfigure list "; or
- includes the IE "RB information to be affected list ":

the UE shall:

- transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- includes "Transport channel information elements":

the UE shall:

- transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- includes "Physical channel information elements":

the UE shall:

- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the CELL UPDATE CONFIRM message

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and
- does not include the IE "New C-RNTI"; and
- does not include the IE "New U-RNTI":

the UE shall:

- transmit no response message.

If the URA UPDATE CONFIRM message

- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes any one or both of the IEs "New C-RNTI" and "New U-RNTI":

the UE shall:

- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the URA UPDATE CONFIRM message

- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and

- does not include the IE "New U-RNTI"; and
- does not include the IE "New C-RNTI":

the UE shall:

- transmit no response message.

If the new state is CELL_DCH or CELL_FACH, the response message shall be transmitted using the new configuration after the state transition., and the UE shall:

- if the variable PDCP_SN_INFO is empty:
  - if the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
    - when RLC has confirmed the successful transmission of the response message:
      - continue with the remainder of the procedure;
  - if the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message did not contain the IE "Ciphering mode info":
    - when RLC has been requested to transmit the response message,
      - continue with the remainder of the procedure;
- if the variable PDCP_SN_INFO non-empty:
  - when RLC has confirmed the successful transmission of the response message:
    - for each radio bearer in the variable PDCP_SN_INFO:
      - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
        - configure the RLC entity for that radio bearer to "continue";
    - continue with the remainder of the procedure;

If the new state is CELL_PCH or URA_PCH, the response message shall be transmitted in CELL_FACH state, and the UE shall:

- when RLC has confirmed the successful transmission of the response message:
  - for each radio bearer in the variable PDCP_SN_INFO:
    - if the IE "RB started" in the variable ESTABLISHED_RABS is set to "started":
      - configure the RLC entity for that radio bearer to "continue";
  - enter the new state (CELL_PCH or URA_PCH, respectively);
- continue with the remainder of the procedure.

8.3.1.7a Physical channel failure

If the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message would cause the UE to transit to CELL_DCH state; and

- in case of a received CELL UPDATE CONFIRM message:
  - if the UE failed to establish the physical channel(s) indicated in the received CELL UPDATE CONFIRM message according to the criteria defined in subclause 8.5.4 are not fulfilled; or
  - the received CELL UPDATE CONFIRM message does not contain dedicated physical channels;
- in case of the UE received a URA UPDATE CONFIRM message:

the UE shall:

- if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
  - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
  - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
    - abort the ongoing integrity and/or ciphering reconfiguration;
    - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
      - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
      - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
    - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
      - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
      - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- if V302 is equal to or smaller than N302:
  - in case of a URA update procedure:
    - stop the URA update procedure; and
    - continue with a cell update procedure;
  - select a suitable UTRA cell according to [4];
  - set the contents of the CELL UPDATE message according to subclause 8.3.1.3, except for the IE "Cell update cause" which shall be set to "Radio link failure";
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure:
    - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure:
    - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;

- set the variable CELL_UPDATE_STARTED to FALSE;
- enter idle mode.

8.3.1.8 Unsupported configuration by the UE

If the UE does not support the configuration in the CELL UPDATE CONFIRM message and/or the variable UNSUPPORTED_CONFIGURATION is set to TRUE, the UE shall:

- if V302 is equal to or smaller than N302, the UE shall:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
        - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - set the variable FAILURE_INDICATOR to TRUE;
  - set the variable FAILURE_CAUSE to "Unsupported configuration";
  - set the content of the CELL UPDATE message according to subclause 8.3.1.3;
  - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - set the variable CELL_UPDATE_STARTED to FALSE;

- enter idle mode;
- Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
- and the procedure ends.

8.3.1.9 Invalid configuration

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

- if V302 is equal to or smaller than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info";
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
        - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - in case of a cell update procedure:
    - set the variable FAILURE_INDICATOR to TRUE;
    - set the variable FAILURE_CAUSE to "Invalid configuration";
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:
    - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
    - submit the URA UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;

- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- set the variable CELL_UPDATE_STARTED to FALSE;
- enter idle mode;
- Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
- the procedure ends.

8.3.1.9a Incompatible simultaneous reconfiguration

In case of a cell update procedure and if the received CELL UPDATE CONFIRM message

- includes "RB information elements"; and/or
- includes "Transport channel information elements"; and/or
- includes "Physical channel information elements"; and
- the variable ORDERED_RECONFIGURATION is set to TRUE because of an ongoing Reconfiguration procedure;

and/or

- if the variable INCOMPATIBLE_SECURITY_RECONFIGURATION becomes set to TRUE of the received CELL UPDATE CONFIRM message:

the UE shall:

- if V302 is equal to or smaller than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
        - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - set the variable FAILURE_INDICATOR to TRUE;
  - set the variable FAILURE_CAUSE to "Incompatible simultaneous reconfiguration";
  - set the content of the CELL UPDATE message according to subclause 8.3.1.3;

- submit the CELL UPDATE message for transmission on the uplink CCCH;
- increment counter V302;
- restart timer T302 when the MAC layer indicates success or failure to transmit the message;

- if V302 is greater than N302:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - set the variable INCOMPATIBLE_SECURITY_RECONFIGURATION to FALSE;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - enter idle mode;
  - Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
  - the procedure ends.

8.3.1.10 Confirmation error of URA ID list

If the URA UPDATE CONFIRM message causes a confirmation error of URA identity list as specified in subclause 8.6.2.1 the UE shall:

- check the value of V302; and
- if V302 is smaller or equal than N302:
  - if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message
    - the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or
    - the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
      - abort the ongoing integrity and/or ciphering reconfiguration;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
        - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
        - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
      - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info"
        - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and

- clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

- set the IEs in the URA UPDATE message according to subclause 8.3.1.3;
- submit the URA UPDATE message for transmission on the uplink CCCH;
- increment counter V302;
- restart timer T302 when the MAC layer indicates success or failure to transmit the message;

- if V302 is greater than N302:
  - release all its radio resources;
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - enter idle mode;
  - perform the actions specified in subclause 8.5.2 when entering idle mode from connected mode;
  - the procedure ends.

8.3.1.11 Invalid CELL UPDATE CONFIRM/URA UPDATE CONFIRM message

If the UE receives an CELL UPDATE CONFIRM/URA UPDATE CONFIRM 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 as follows:

- If V302 is equal to or smaller than N302, the UE shall:
  - set the variable PROTOCOL_ERROR_INDICATOR to TRUE;
  - in case of a cell update procedure:
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:
    - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
    - submit the URA UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;
  - restart timer T302 when the MAC layer indicates success or failure to transmit the message;
- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - in case of a cell update procedure:

- clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;

- in case of a URA update procedure:

  - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;

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

- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;

- clear the variable ESTABLISHED_RABS;

- set the variable CELL_UPDATE_STARTED to FALSE;

- release all its radio resources;

- enter idle mode;

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

- the procedure ends.

8.3.1.12 T302 expiry or cell reselection

If any or several of the following conditions are true:

- expiry of timer T302;

- reselection to another UTRA cell (including the previously serving cell) before completion of the cell update or URA update procedure;

the UE shall:

- stop T302 if it is running;

- if the UE was in CELL_DCH state prior to the initiation of the procedure; and

  - if timers T314 and T315 have elapsed while T302 was running:

    - enter idle mode.

    - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers. Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2.

    - and the procedure ends.

    - if timer T314 has elapsed while T302 was running and,

      - if "T314 expired" in the variable RB_TIMER_INDICATOR is set to FALSE and

      - if T315 is still running:

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

        - indicate release of those radio access bearers to upper layers;

        - delete all information about those radio access bearers from the variable ESTABLISHED_RABS;

        - set "T314 expired" in the variable RB_TIMER_INDICATOR to TRUE;

- if timer T315 has elapsed while T302 was running and,
  - if "T315 expired" in the variable RB_TIMER_INDICATOR is set to FALSE and,
  - if T314 is still running:
    - release locally all radio bearers which are associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT315";
    - indicate release of those radio access bearers to upper layers;
    - delete all information about those radio access bearers from the variable ESTABLISHED_RABS;
    - set "T315 expired" in the variable RB_TIMER_INDICATOR to TRUE;

- check whether it is still in "in service area" (see subclause 8.5.5.2);
- if, caused by the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE and/or the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:
  - abort the ongoing integrity and/or ciphering reconfiguration;
  - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Ciphering mode info":
    - set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and
    - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - if the received CELL UPDATE CONFIRM or URA UPDATE CONFIRM message contained the IE "Integrity protection mode info":
    - set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and
    - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
- in case of a cell update procedure:
  - clear any entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;
- in case of a URA update procedure:
  - clear any entry for the URA UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS;

If the UE detects "in service area" if it has not entered idle mode, and:

- if V302 is equal to or smaller than N302, the UE shall:
  - if the UE performed cell re-selection:
    - delete its C-RNTI;
  - in case of a cell update procedure:
    - set the contents of the CELL UPDATE message according to subclause 8.3.1.3;
    - submit the CELL UPDATE message for transmission on the uplink CCCH;
  - in case of a URA update procedure:
    - set the contents of the URA UPDATE message according to subclause 8.3.1.3;
    - submit the URA UPDATE message for transmission on the uplink CCCH;
  - increment counter V302;

- restart timer T302 when the MAC layer indicates success or failure to transmit the message;

- if V302 is greater than N302, the UE shall:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - in case of a cell update procedure:
    - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - in case of a URA update procedure:
    - clear the entry for the URA UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - enter idle mode;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
  - and the procedure ends.

If the UE does not detect "in service area", it shall:

- continue searching for "in service area".

8.3.1.13 T314 expiry

Upon expiry of timer T314 the UE shall:

- if timer T302 is running:
  - continue awaiting response message from UTRAN;
- if timer T302 is not running and timer T315 is running:
  - set IE "T314 expired" in variable RB_TIMER_INDICATOR to TRUE;
  - release locally all radio bearers which are associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "useT314";
  - indicate release of those radio access bearers to upper layers;
  - delete all information about those radio access bearers from the variable ESTABLISHED_RABS;
- if timers T302 and T315 are not running:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

- clear the variable PDCP_SN_INFO;
- clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
- release all its radio resources;
- indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
- clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
- clear the variable ESTABLISHED_RABS;
- set the variable CELL_UPDATE_STARTED to FALSE;
- enter idle mode;
- other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;
- and the procedure ends.

8.3.1.14 T315 expiry

Upon expiry of timer T315 the UE shall:

- if timer T302 is running:
  - continue awaiting response message from UTRAN;
- if timer T302 is not running and timer T314 is running:
  - set IE "T315 expired" in variable RB_TIMER_INDICATOR to TRUE;
  - release locally all radio bearers which are associated with any radio access bearers for which in the variable ESTABLISHED_RABS the value of the IE "Re-establishment timer" is set to "use T315";
  - indicate release of those radio access bearers to upper layers;
  - delete all information about those radio access bearers from the variable ESTABLISHED_RABS;
- if timers T302 and T314 are not running:
  - clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;
  - clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;
  - clear the variable PDCP_SN_INFO;
  - clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS;
  - release all its radio resources;
  - indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;
  - clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;
  - clear the variable ESTABLISHED_RABS;
  - set the variable CELL_UPDATE_STARTED to FALSE;
  - enter idle mode;

- other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2;

- and the procedure ends.

8.3.1.15 Reception of the UTRAN MOBILITY INFORMATION CONFIRM message by the UTRAN

See subclause 8.3.3.4.

8.3.2 URA update

See subclause 8.3.1.

10.3.3.46 URA update cause

Indicates the cause for s URA update.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
URA update cause	MP		Enumerated(change of URA, periodic URA update~~, re-entered service area~~)	At least one spare value needed.

```
URA-UpdateCause ::=                 ENUMERATED {
                                        changeOfURA,
                                        periodicURAUpdate,
                                        re-enteredServiceAreadummy,
                                        spare1 }
```

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Tdoc r2-011907

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **993** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

*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:	⌘	PDCP configuration and PS domain configuration checks
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	15/08/01
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: ⌘

1/ The specification does not contain any consistancy checks for the PDCP configuration. The network could potentially signal some invalid configurations that could lead to undefined UE bahaviour. The UE bahaviour needs to e defined for these cases.

2/ According to 23.060 section 14.4 there can only be one radio bearer per radio access bearer in the PS domain. Section 14.4 states: 'There is a one to one relationship between NSAPI, Radio Access Bearer, and PDP context. In the packet domain, there is also a one to one relationship with Radio Bearer Identity. However, 25.331 could allow multiple RAB subflows to be set up for one PS domain Radio Access Bearer. 25.331 should be aligned with 23.060 and consider this case as an invalid configuration.

Summary of change: ⌘

1/ Consistancy checks for the PDCP configuration are added to section 8.6.4.10. The following cases are considered to be invalid configurations:

1 - PDCP configured for a CS domain RAB
2 - PDCP configured for 'no header' and lossless SRNS relocation is configured
3 - PDCP configured for 'header present' but neither compression or lossless SRNS relocation is configured

2/ A configuration check is added to 25.331 section 8.6.4.10 so that multiple RAB subflows for a PS domain RAB is considered as an invalid configuration.

Isolated impact analysis:
Corrected funtionality: Consistancy checking of radio bearer configurations.

Correction to a function where the spcification was missing procedural rules. Would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected behaviour otherwise.

Consequences if not approved:	⌘	The specification will be lacking rules for checking invalid configurations. Different mobile implementations may have inconsistant behaviour when configured with incorrect PDCP and PS domain configurations.

Clauses affected:	⌘	8.6.4.2, 8.6.4.10		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v4.1.0, CR 994
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. ⌘

8.6.4.2 RAB information for setup

If the IE "RAB information for setup" is included, the procedure is used to establish radio bearers belonging to a radio access bearer, and the UE shall:

- if several IEs "RAB information for setup" are included and the included IEs "CN domain identity" in the IE "RAB info" does not all have the same value:
  - set the variable INVALID_CONFIGURATION to TRUE;
- if the radio access bearer identified with the IE "RAB info" does not exist in the variable ESTABLISHED_RABS:
  - create a new entry for the radio access bearer in the variable ESTABLISHED_RABS;
  - store the content of the IE "RAB info" in the entry for the radio access bearer in the variable ESTABLISHED_RABS;
  - indicate the establishment of the radio access bearer to the upper layer entity using the IE "CN domain identity", forwarding the content of the IE "RAB identity";
  - calculate the START value only once during this procedure (the same START value shall be used on all new radio bearers created for this radio access bearer) according to subclause 8.5.9 for the CN domain as indicated in the IE "CN domain identity" in the IE "RAB info" part of the IE "RAB information to setup";
  - store the calculated START value in the variable START_VALUE_TO_TRANSMIT;
- for each radio bearer in the IE "RB information to setup":
  - if the radio bearer identified with the IE "RB identity" does not exist in the variable ESTABLISHED_RABS for another radio access bearer than the one identified with the IE "RAB info":
    - perform the actions specified in subclause 8.6.4.3;
    - store information about the new radio bearer in the entry for the radio access bearer identified by "RAB info" in the variable ESTABLISHED_RABS;
  - if the radio bearer identified with the IE "RB identity" does not exist in the variable ESTABLISHED_RABS for the radio access bearer identified with the IE "RAB info":
    - create a new RAB subflow for the radio access bearer;
    - number the RAB subflow in ascending order, assigning the smallest number to the RAB subflow corresponding to the first radio bearer in the list;
    - if the IE "CN domain identity" in the IE "RAB info" is set to "PS domain" and the number of RAB subflows for the radio access bearer is greater than 1:
      - set the variable INVALID_CONFIGURATION to TRUE.
  - if the radio bearer identified with the IE "RB identity" already exists in the variable ESTABLISHED_RABS for another radio access bearer than the one identified with the IE "RAB info":
    - set the variable INVALID_CONFIGURATION to TRUE.

8.6.4.10 PDCP Info

If IE "PDCP info" is included, the UE shall:

- if the radio bearer is connected to a CS domain radio access bearer:
  - set the variable INVALID_CONFIGURATION to TRUE;
- if the IE "PDCP PDU header" is set to the value "absent"; and
- the IE "Support for lossless SRNS relocation" is true:
  - set the variable INVALID_CONFIGURATION to TRUE;
- if the IE "PDCP PDU header" is set to the value "present"; and
- the IE "Support for lossless SRNS relocation" is false; and
- the IE "Header compression information" is absent:
  - set the variable INVALID_CONFIGURATION to TRUE;
- configure the PDCP entity for that radio bearer accordingly;
- configure the RLC entity for that radio bearer according to the value of the IE "Support for lossless SRNS relocation".

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th-31st August 2001

Tdoc r2-012015

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CHANGE REQUEST

⌘ **25.331 CR 994** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

*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:	⌘	PDCP configuration and PS domain configuration checks
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	15/08/01
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: ⌘

1/ The specification does not contain any consistancy checks for the PDCP configuration. The network could potentially signal some invalid configurations that could lead to undefined UE bahaviour. The UE bahaviour needs to e defined for these cases.

2/ According to 23.060 section 14.4 there can only be one radio bearer per radio access bearer in the PS domain. Section 14.4 states: 'There is a one to one relationship between NSAPI, Radio Access Bearer, and PDP context. In the packet domain, there is also a one to one relationship with Radio Bearer Identity. However, 25.331 could allow multiple RAB subflows to be set up for one PS domain Radio Access Bearer. 25.331 should be aligned with 23.060 and consider this case as an invalid configuration.

Summary of change: ⌘

1/ Consistancy checks for the PDCP configuration are added to section 8.6.4.10. The following cases are considered to be invalid configurations:

1 - PDCP configured for a CS domain RAB
2 - PDCP configured for 'no header' and lossless SRNS relocation is configured
3 - PDCP configured for 'header present' but neither compression or lossless SRNS relocation is configured

2/ A configuration check is added to 25.331 section 8.6.4.10 so that multiple RAB subflows for a PS domain RAB is considered as an invalid configuration.

Isolated impact analysis:
Corrected funtionality: Consistancy checking of radio bearer configurations.

Correction to a function where the spcification was missing procedural rules. Would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected behaviour otherwise.

Consequences if not approved:	⌘	The specification will be lacking rules for checking invalid configurations. Different mobile implementations may have inconsistant behaviour when configured with incorrect PDCP and PS domain configurations.

Clauses affected:	⌘	8.6.4.2, 8.6.4.10		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v3.7.0, CR 993
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://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. ⌘

8.6.4.2 RAB information for setup

If the IE "RAB information for setup" is included, the procedure is used to establish radio bearers belonging to a radio access bearer, and the UE shall:

- if several IEs "RAB information for setup" are included and the included IEs "CN domain identity" in the IE "RAB info" does not all have the same value:
  - set the variable INVALID_CONFIGURATION to TRUE;
- if the radio access bearer identified with the IE "RAB info" does not exist in the variable ESTABLISHED_RABS:
  - create a new entry for the radio access bearer in the variable ESTABLISHED_RABS;
  - store the content of the IE "RAB info" in the entry for the radio access bearer in the variable ESTABLISHED_RABS;
  - indicate the establishment of the radio access bearer to the upper layer entity using the IE "CN domain identity", forwarding the content of the IE "RAB identity";
  - calculate the START value only once during this procedure (the same START value shall be used on all new radio bearers created for this radio access bearer) according to subclause 8.5.9 for the CN domain as indicated in the IE "CN domain identity" in the IE "RAB info" part of the IE "RAB information to setup";
  - store the calculated START value in the variable START_VALUE_TO_TRANSMIT;
- for each radio bearer in the IE "RB information to setup":
  - if the radio bearer identified with the IE "RB identity" does not exist in the variable ESTABLISHED_RABS for another radio access bearer than the one identified with the IE "RAB info":
    - perform the actions specified in subclause 8.6.4.3;
    - store information about the new radio bearer in the entry for the radio access bearer identified by "RAB info" in the variable ESTABLISHED_RABS;
  - if the radio bearer identified with the IE "RB identity" does not exist in the variable ESTABLISHED_RABS for the radio access bearer identified with the IE "RAB info":
    - create a new RAB subflow for the radio access bearer;
    - number the RAB subflow in ascending order, assigning the smallest number to the RAB subflow corresponding to the first radio bearer in the list;
    - if the IE "CN domain identity" in the IE "RAB info" is set to "PS domain" and the number of RAB subflows for the radio access bearer is greater than 1:
      - set the variable INVALID_CONFIGURATION to TRUE.
  - if the radio bearer identified with the IE "RB identity" already exists in the variable ESTABLISHED_RABS for another radio access bearer than the one identified with the IE "RAB info":
    - set the variable INVALID_CONFIGURATION to TRUE.

8.6.4.10 PDCP Info

For RFC 3095:

- the chosen MAX_CID shall not be greater than the value "Maximum number of ROHC context sessions" as indicated in the IE "PDCP Capability";
- the configuration for the PACKET_SIZES_ALLOWED is FFS.

If IE "PDCP info" is included, the UE shall:

- if the radio bearer is connected to a CS domain radio access bearer:
  - set the variable INVALID_CONFIGURATION to TRUE;
- if the IE "PDCP PDU header" is set to the value "absent"; and
- the IE "Support for lossless SRNS relocation" is true:
  - set the variable INVALID_CONFIGURATION to TRUE;
- if the IE "PDCP PDU header" is set to the value "present"; and
- the IE "Support for lossless SRNS relocation" is false; and
- the IE "Header compression information" is absent:
  - set the variable INVALID_CONFIGURATION to TRUE;

- configure the PDCP entity for that radio bearer accordingly;
- configure the RLC entity for that radio bearer according to the value of the IE "Support for lossless SRNS relocation".

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th-31st August 2001

Tdoc R2-012140

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CHANGE REQUEST

⌘ **25.331** **CR** **995** ⌘ ev **r1** ⌘ Current version: **3.7.0** ⌘

*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 handling of RRC transaction identifier.
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	16/08/01
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:	⌘	See attached discussion document
Summary of change:	⌘	Clarifying note added to section 8.6.3.11 **Isolated impact analysis:** Corrected functionality: Handling of RRC transaction identifier in received Cell Update, URA Update, and RRC connection setup messages. Correction to a function where the specification was not sufficiently explicit. Would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected behaviour otherwise
Consequences if not approved:	⌘	The specification will require the UE to handle subsequent received Cell Update, URA Update and RRC Connection Setup messages in the event of a race condition due to poor setting of timer values.

Clauses affected:	⌘	8.6.3.11		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v4.1.0, CR 996
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. ⌘

8.6.3.11 RRC transaction identifier

The IE "RRC transaction identifier" may be used, together with the message type, for identification of an invocation of a downlink procedure (transaction). The UE behaviour for accepting or rejecting transactions based on the message type and the IE "RRC transaction identifier" is specified below.

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- RADIO BEARER SETUP; or
- RADIO BEARER RECONFIGURATION; or
- RADIO BEARER RELEASE; or
- TRANSPORT CHANNEL RECONFIGURATION; or
- PHYSICAL CHANNEL RECONFIGURATION:

the UE shall:

- if the variable ORDERED_RECONFIGURATION is set to FALSE; and
- if the variable CELL_UPDATE_STARTED is set to FALSE; and
- if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
  - accept the transaction; and
  - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
- else:
- if the variable ORDERED_RECONFIGURATION is set to TRUE; or
- if the variable CELL_UPDATE_STARTED is set to TRUE; or
- if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
  - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
    - ignore the transaction; and
    - continue with any ongoing processes and procedures as the message was not received;
    - and end the procedure;
  - else:
    - reject the transaction; and
    - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
      - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

Else:

If the received message is any of the messages:

- RRC CONNECTION SETUP; or
- CELL UPDATE CONFIRM; or
- URA UPDATE CONFIRM:

the UE shall:

- if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
    - accept the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
  - else:
  - if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
    - reject the transaction; and
    - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.
- else:
- if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - ignore the transaction; and
    - continue with any ongoing processes and procedures as the message was not received; and
    - end the procedure;
  - else:
  - if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
      - ignore the once accepted transaction and instead accept the new transaction; and
      - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS, replacing the previous entry;

NOTE: The UE is expected to process the first RRC CONNECTION SETUP/CELL UPDATE CONFIRM/URA UPDATE COMFIRM message that it receives after transmitting an RRC CONNECTION SETUP REQUEST/CELL_UPDATE/URA_UPDATE message. If the UE receives further RRC CONNECTION SETUP/CELL UPDATE CONFIRM/URA UPDATE COMFIRM messages without having transmitted another RRC CONNECTION SETUP REQUEST/CELL_UPDATE/URA_UPDATE message, the UE is not required to process these messages.

- else:
- if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
  - reject the transaction; and
  - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

Else:

If the received message is any other message, the UE shall:

- if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
    - accept the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
  - else:
  - if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
    - reject the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.
- else:
- if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored in any entry for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - ignore the transaction; and
    - continue with any ongoing processes and procedures as the message was not received; and
    - end the procedure;
  - else:
  - if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored in all entries for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:

- if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
  - accept the additional transaction; and
  - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS, in addition to the already existing entries;
- else:
- if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
  - reject the transaction; and
  - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

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Helsinki, Finland, 27th-31st August 2001

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CHANGE REQUEST

⌘ **25.331** **CR** **996** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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

Title:	⌘	Correction to handling of RRC transaction identifier.
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	16/08/01
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:	⌘	See attached discussion document
Summary of change:	⌘	Clarifying note added to section 8.6.3.11 **Isolated impact analysis:** Corrected functionality: Handling of RRC transaction identifier in received Cell Update, URA Update, and RRC connection setup messages. Correction to a function where the specification was not sufficiently explicit. Would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected behaviour otherwise
Consequences if not approved:	⌘	The specification will require the UE to handle subsequent received Cell Update, URA Update and RRC Connection Setup messages in the event of a race condition due to poor setting of timer values.

Clauses affected:	⌘	8.6.3.11		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v3.7.0, CR 995r1
Other comments:	⌘			

How to create CRs using this form:
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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. ⌘

8.6.3.11 RRC transaction identifier

The IE "RRC transaction identifier" may be used, together with the message type, for identification of an invocation of a downlink procedure (transaction). The UE behaviour for accepting or rejecting transactions based on the message type and the IE "RRC transaction identifier" is specified below.

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- RADIO BEARER SETUP; or
- RADIO BEARER RECONFIGURATION; or
- RADIO BEARER RELEASE; or
- TRANSPORT CHANNEL RECONFIGURATION; or
- PHYSICAL CHANNEL RECONFIGURATION:

the UE shall:

- if the variable ORDERED_RECONFIGURATION is set to FALSE; and
- if the variable CELL_UPDATE_STARTED is set to FALSE; and
- if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
  - accept the transaction; and
  - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
- else:
- if the variable ORDERED_RECONFIGURATION is set to TRUE; or
- if the variable CELL_UPDATE_STARTED is set to TRUE; or
- if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
  - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
    - ignore the transaction; and
    - continue with any ongoing processes and procedures as the message was not received;
    - and end the procedure;
  - else:
    - reject the transaction; and
    - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
      - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

Else:

If the received message is any of the messages:

- RRC CONNECTION SETUP; or
- CELL UPDATE CONFIRM; or
- URA UPDATE CONFIRM:

the UE shall:

- if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
    - accept the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
  - else:
  - if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
    - reject the transaction; and
    - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.
- else:
- if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - ignore the transaction; and
    - continue with any ongoing processes and procedures as the message was not received; and
    - end the procedure;
  - else:
  - if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
      - ignore the once accepted transaction and instead accept the new transaction; and
      - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS, replacing the previous entry;

NOTE: The UE is expected to process the first RRC CONNECTION SETUP/CELL UPDATE CONFIRM/URA UPDATE COMFIRM message that it receives after transmitting an RRC CONNECTION SETUP REQUEST/CELL_UPDATE/URA_UPDATE message. If the UE receives further RRC CONNECTION SETUP/CELL UPDATE CONFIRM/URA UPDATE COMFIRM messages without having transmitted another RRC CONNECTION SETUP REQUEST/CELL_UPDATE/URA_UPDATE message, the UE is not required to process these messages.

- else:
- if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
  - reject the transaction; and
  - if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

Else:

If the received message is any other message, the UE shall:

- if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
    - accept the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS;
  - else:
  - if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
    - reject the transaction; and
    - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.
- else:
- if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored in any entry for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - ignore the transaction; and
    - continue with any ongoing processes and procedures as the message was not received; and
    - end the procedure;
  - else:
  - if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored in all entries for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:

- if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL_ERROR_REJECT is set to FALSE:
  - accept the additional transaction; and
  - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS, in addition to the already existing entries;
- else:
- if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE:
  - reject the transaction; and
  - store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

3GPP TSG-RAN WG2 Meeting #22
Helsinki, Finland, 27th – 31st August

R2-012201

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 997** ⌘ ev **r2** ⌘ Current version: **3.7.0** ⌘

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

Title:	⌘	Correction of UE capabilities regarding Rx-Tx time difference type 2 measurement
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	04.09.01
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
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A *(corresponds to a correction in an earlier release)*
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R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘

During RAN WG2/WG4 joint meeting in July, it was decided to keep the Rx-Tx time difference type 2 measurement optional according to RAN WG4s understanding.

Therefore, in order to enable a UE to indicate its capability to perform this measurement, an additional IE is added to the UE positioning capability.

Besides, currently the UTRAN is not able to request the UE to perform Rx-Tx time difference type 2 measurement on the reference cell. As already agreed at the last meeting, this is resolved by adding a new value "Cell ID" to the IE Positioning Method.

The IE 'UE positioning position estimate info' allows the UE with the capability to send a GPS time stamp, plus a reference SFN at which the GPS time stamp is valid. Currently within the ASN.1, the reference SFN is mandatory but the GPS time stamp is optional, but the reference SFN is meaningless without the GPS time stamp.

Current the tabular description (10.3.7.93, and 10.3.7.109) uses CV for the GPS time stamp IEs but the condition described relates to a number of factors outside the message contents. This is not in line with the guidelines that it should be possible to evaluate the condition based on the contents of the message.

Need for choice is missing in 10.3.7.93, 10.3.7.96, 10.3.7.109.

Isolated impact:

Only UE positioning is impacted. The additional IE is added in an extension container, so that implementations of earlier releases are not impacted.

The addition of cell ID to IE Positioning Method has no isolated impact, because only 3 of 4 possible values have been used up to now.

Making the reference SFN optional in table 10.3.7.109 is a correction to unambiguously specify functionality. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality.

Summary of change:	⌘	Capability to perform Rx-Tx time difference type2 measurement is added to the UE Radio access capabilities. For sections 10.3.7.93, 10.3.7.96, 10.3.7.109, the choice need is specified as OP in Tabular and the ASN.1 is modified accordingly.
Consequences if not approved:	⌘	UE positioning feature may be implemented in different ways, resulting in unpredictable UE behaviour

Clauses affected:	⌘	8.6.7.19 (new), 8.6.7.19.1 (new), 8.6.7.19.2 (new), 10.3.3.45, 10.3.7.93, 10.3.7.96, 10.3.7.109, 10.3.7.111, 11.2, 11.3, 14.7.1, 14.7.2, 14.7.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v4.1.0, CR 998r1
Other comments:	⌘			

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8.6.7.19 UE positioning

8.6.7.19.1 UE positioning reporting quantity

The UE shall

- ignore IE “Multiple Sets”;
- ignore IE “Response Time”;
- if IE “Accuracy” is included, the UE should try to achieve the requested positioning accuracy with 67% confidence
- if IE “Positioning Methods” is set to “Cell ID”,
  - perform the Rx-Tx time difference type 2 measurement on the reference cell indicated in the OTDOA assistance data
- if the IE "Method Type" is set to "UE based":
  - if the IE "Positioning Methods" is set to "GPS":
    - when a measurement report is triggered, include the IE "UE positioning position estimate info" in the measurement report and set the contents of the IE as follows:
      - if the UE supports the capability to provide the GPS timing of the cell, and
      - if the IE "GPS timing of Cell wanted" is set to true:
        - include the IE "Primary CPICH Info" for FDD or the IE "cell parameters id" for TDD; and
        - include the IE "Reference SFN", the IE "GPS TOW msec"; and
        - the UE may include the IE "GPS TOW rem usec".
  - if the IE "Positioning Methods" is set to "OTDOA":
    - when a measurement report is triggered, include the IE "UE positioning position estimate info" in the measurement report
- if the IE "Method Type" is set to "UE assisted":
  - if the IE "Positioning Methods" is set to "GPS":
    - when a measurement report is triggered, include the IE "UE positioning GPS measured results" in the measurement report and set the contents of the IE as follows:
      - if the UE supports the capability to provide the GPS timing of the cell, and
      - if the IE "GPS timing of Cell wanted" is set to true:
        - include the IE "Primary CPICH Info" for FDD or the IE "cell parameters id" for TDD; and
        - include the IE "Reference SFN", the IE "GPS TOW msec"; and
        - the UE may include the IE "GPS TOW rem usec".
      - if the UE does not support the capability to provide the GPS timing of the cell:
        - include the IE “GPS TOW msec”.
  - if the IE "Positioning Methods" is set to "OTDOA":
    - when a measurement report is triggered, include the IE "UE positioning OTDOA measured results" in the measurement report

The UE shall perform the following consistency check:

- if UE, according to its capabilities, does not support UE based OTDOA and if IE “Positioning Methods” is set to “OTDOA” and if IE “Method Type” is set to “UE based”,

  - act as specified in section 8.4.1.4

- if UE, according to its capabilities, does not support UE based GPS and if IE “Positioning Methods” is set to “GPS” and if IE “Method Type” is set to “UE based”,

  - act as specified in section 8.4.1.4

- if UE, according to its capabilities, does not support UE assisted GPS and if IE “Positioning Methods” is set to “GPS” and if IE “Method Type” is set to “UE assisted”,

  - act as specified in section 8.4.1.4

- if UE, according to its capabilities, does not support UE based positioning and if IE “Positioning Methods” is set to “OTDOAorGPS” and if IE “Method Type” is set to “UE based”,

  - act as specified in section 8.4.1.4

- if UE, according to its capabilities, does not support Rx-Tx time difference type 2 measurement and if IE “Positioning Methods” is set to “Cell ID”,

  - act as specified in section 8.4.1.4

8.6.7.19.2 UE positioning OTDOA assistance data

If IE “UE positioning OTDOA reference cell info” is received in System Information Block 15.4 or in the MEASUREMENT CONTROL message, the UE shall update the variable UE_POSITIONING_OTDOA_DATA accordingly. The UE shall:

- store received cell information in the UE positioning reference cell info in the variable UE_POSITIONING_OTDOA_DATA, overwriting any existing information

If IE “UE positioning OTDOA neighbour cell list” is received in System Information Block 15.4 or in the MEASUREMENT CONTROL message, the UE shall update the variable UE_POSITIONING_OTDOA_DATA accordingly. The UE shall:

- store received cell information in the neighbour cell info list in the variable CELL_INFO_LIST, overwriting any existing information

If, according to its capabilities, UE does not support IPDLs and if IE “IPDL parameters” is received for the reference or any of the neighbour cells, the UE shall

- ignore this IE.

If IE “UE positioning measurement” is received in the MEASUREMENT CONTROL message, the UE shall also perform the following consistency checks:

- if IE “Positioning Methods” is set to “OTDOA” or “Cell ID” and

  - if IE “UE positioning OTDOA reference cell info” is not included and if UE positioning OTDOA reference cell info in variable UE_POSITIONING_OTDOA_DATA is empty

    - set the variable CONFIGURATION_INCOMPLETE to TRUE;

- if IE “Positioning Methods” is set to “OTDOA” and

  - if IE “UE positioning OTDOA neighbour cell list” is not included and if less than two neighbour cells are stored in UE positioning OTDOA neighbour cell info list in variable UE_POSITIONING_OTDOA_DATA

    - set the variable CONFIGURATION_INCOMPLETE to TRUE;

  - if IE “Method Type” is set to “UE based” and

- if IE “UE positioning OTDOA reference cell info” is included and if IE “Cell Position” for the reference cell is not included, the UE shall,

  - set the variable CONFIGURATION_INCOMPLETE to TRUE;

- if the IE ”UE positioning OTDOA neighbour cell list” is included and if cell position of less than two neighbour cells of the cells included in this IE and stored in variable UE_POSITIONING_OTDOA_DATA are different and if those cell positions are not different to the one of the reference cell stored in variable UE_POSITIONING_OTDOA_DATA, the UE shall,

  - set the variable CONFIGURATION_INCOMPLETE to TRUE;

- if the IE ”UE positioning OTDOA neighbouring cell list” is included and only two neighbour cells are included or stored in variable UE_POSITIONING_OTDOA_DATA and if the IE “Round Trip Time” is neither included for the neighbour cells nor for the reference cell info, the UE shall,

  - set the variable CONFIGURATION_INCOMPLETE to TRUE;

10.3.3.45 UE positioning capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Standalone location method(s) supported	MP		Boolean	Defines if a UE can measure its location by some means unrelated to UTRAN TRUE means supported
UE based OTDOA supported	MP		Boolean	TRUE means supported
Network Assisted GPS support	MP		Enumerated ('Network based', 'UE based', 'Both', 'None')	Defines if the UE supports network based or UE based GPS methods.
GPS reference time capable	MP		Boolean	Defines if a UE has the capability to measure GPS reference time as defined in [7]. TRUE means capable
Support for IPDL	MP		Boolean	Defines if a UE has the capability to use IPDL to enhance its 'SFN-SFN observed time difference –type 2' measurement. TRUE means supported
Support for Rx-Tx time difference type2 measurement	MP		Boolean	TRUE means supported

10.3.7.93 UE positioning GPS measured results

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE *mode*	~~O~~P			
>FDD				
>>Primary CPICH Info	~~O~~PMP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	~~O~~PMP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
Reference SFN	OP		Integer(0..4095)	The SFN for which the location is valid
GPS TOW msec	MP		Integer(0..6.048*10^{8}-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit). This time is the GPS TOW measured by the UE. If the Reference SFN field is present it is the ms flank closest to the beginning of that frame. GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec
GPS TOW rem usec	~~CV-capability and request~~OP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
Measurement Parameters	MP	1 to <maxSat>		
>Satellite ID	MP		Enumerated(0..63)	
>C/N_o	MP		Integer(0..63)	the estimate of the carrier-to-noise ratio of the received signal from the particular satellite used in the measurement. It is given in whole dBs. Typical levels observed by UE-based GPS units will be in the range of 20 – 50 dB.
>Doppler	MP		Integer(-32768..32768)	Hz, scale factor 0.2.
>Whole GPS Chips	MP		Integer(0..1023)	Unit in GPS chips
>Fractional GPS Chips	MP		Integer(0..(2^{10}-1))	Scale factor 2^{-10}
>Multipath Indicator	MP		Enumerated(NM, low, medium, high)	See note 1
>Pseudorange RMS Error	MP		Enumerated(range index 0..range index 63)	See note 2

Condition	Explanation
~~*Capability and request*~~	~~This field is included only if the UE has this capability *and* if it was requested in the UE positioning reporting quantity~~

NOTE 1: The following table gives the mapping of the multipath indicator field.

Value	Multipath Indication
NM	Not measured
Low	MP error < 5m
Medium	5m < MP error < 43m
High	MP error > 43m

NOTE 2: The following table gives the bitmapping of the Pseudorange RMS Error field.

Range Index	Mantissa	Exponent	Floating-Point value, x_i	Pseudorange value, P
0	000	000	0.5	P < 0.5
1	001	000	0.5625	0.5 <= P < 0.5625
I	X	Y	$0.5 * (1 + x/8) * 2^y$	x_{i-1} <= P < x_i
62	110	111	112	104 <= P < 112
63	111	111	--	112 <= P

10.3.7.96 UE positioning GPS reference time

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
GPS Week	MP		Integer(0..1023)	
GPS TOW msec	MP		Integer(0..6.048*10^8-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit).
GPS TOW rem usec	OP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000. GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec
CHOICE *mode*	OP			
>FDD				
>>Primary CPICH Info	~~OP~~MP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	~~OP~~MP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
SFN	OP		Integer(0..4095)	The SFN which the GPS TOW time stamps. SFN and GPS TOW msec and GPS TOW rem usec are included if relation GPS TOW/SFN is known to at least 10 μs.
SFN-TOW Uncertainty	OP		Enumerated (lessThan10, moreThan10)	This field indicates the uncertainty of the relation GPS TOW/SFN. lessThan10 means the relation is accurate to at least 10 ms.
Node B Clock Drift	OP		Real(-0.09375..0.09375 by step of 0.0125)	μsec/sec (ppm)
GPS TOW Assist	OP	1 to <maxSat>		
>SatID	MP		Enumerated(0..63)	
>TLM Message	MP		Bit string(14)	
>TLM Reserved	MP		Bit string(2)	
>Alert	MP		Boolean	
>Anti-Spoof	MP		Boolean	

10.3.7.109 UE positioning position estimate info

The purpose of this IE is to provide the position estimate from the UE to the network, if the UE is capable of determining its own position.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE *mode*	~~O~~P			
>FDD				
>>Primary CPICH Info	~~O~~PMP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	~~O~~PMP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
Reference SFN	~~M~~POP		Integer(0..4095)	The SFN for which the location is valid
GPS TOW msec	~~CV-Capability and request~~OP		Integer(0..$604800*10^8$-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit). This time-stamps the beginning of the frame defined in Reference SFN GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec
GPS TOW rem usec	~~CV-Capability and request~~OP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
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	

Condition	Explanation
~~*Capability and request*~~	~~This field is included only if the UE has this capability *and* if it was requested in the UE positioning reporting quantity and if the method was UE-based GPS~~

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, Cell ID)	
Response Time	MP		Integer(1,2,4 , 8, 16, 32, 64, 128)	in seconds
Accuracy	CV-*MethodType*		Bitstring(7)	The uncertainty is derived from the "uncertainty code" k by $r = 10*(1.1^k-1)$
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

11.2 PDU definitions

```
-- **************************************************
--
-- RRC CONNECTION SETUP COMPLETE
--
-- **************************************************

RRCConnectionSetupComplete ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        startList                       STARTList,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    --  Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- Non critical extensions
        v370NonCriticalExtensions           SEQUENCE {
            rrcConnectionSetupComplete-v370ext  RRCConnectionSetupComplete-v370ext,
            -- Reserved for future non critical extension
            nonCriticalExtensions           SEQUENCE {
                rrcConnectionSetupComplete-v380ext  RRCConnectionSetupComplete-v380ext,
                -- Reserved for future non critical extension
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

RRCConnectionSetupComplete-v370ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v370ext    UE-RadioAccessCapability-v370ext    OPTIONAL
}

RRCConnectionSetupComplete-v380ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v380ext    UE-RadioAccessCapability-v380ext    OPTIONAL
}


-- **************************************************
--
-- UE CAPABILITY INFORMATION
--
-- **************************************************

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier           OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList
    OPTIONAL,
    -- Non critical extensions
        v370NonCriticalExtensions           SEQUENCE {
            ueCapabilityInformation-v370ext UECapabilityInformation-v370ext,
            -- Reserved for future non critical extension
            nonCriticalExtensions           SEQUENCE {
                ueCapabilityInformation-v380ext UECapabilityInformation-v380ext,
                -- Reserved for future non critical extension
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

UECapabilityInformation-v370ext::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v370ext        UE-RadioAccessCapability-v370ext
    OPTIONAL
```

```
}

UECapabilityInformation-v380ext::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v380ext        UE-RadioAccessCapability-v380ext
    OPTIONAL
}
```

11.3 Information element definitions

```
UE-Positioning-Capability ::=                   SEQUENCE {
    standaloneLocMethodsSupported       BOOLEAN,
    ue-BasedOTDOA-Supported             BOOLEAN,
    networkAssistedGPS-Supported        NetworkAssistedGPS-Supported,
    gps-ReferenceTimeCapable            BOOLEAN,
    supportForIPDL                      BOOLEAN
}

UE-RadioAccessCapability ::=        SEQUENCE {
    ics-Version                         ICS-Version,
    pdcp-Capability                     PDCP-Capability,
    rlc-Capability                      RLC-Capability,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability,
    physicalChannelCapability           PhysicalChannelCapability,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability,
    securityCapability                  SecurityCapability,
    ue-positioning-Capability           UE-Positioning-Capability,
    measurementCapability               MeasurementCapability       OPTIONAL
}

UE-RadioAccessCapability-v370ext::=     SEQUENCE {
    ue-RadioAccessCapabBandFDDList      UE-RadioAccessCapabBandFDDList
}

UE-RadioAccessCapability-v380ext::=     SEQUENCE {
    ue-PositioningCapabilityExt         UE-PositioningCapabilityExt
}


UE-PositioningCapabilityExt::=          SEQUENCE {
    rx-tx-TimeDifferenceType2Capable    BOOLEAN
}

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


PositioningMethod ::=               ENUMERATED {
                                        otdoa,
                                        gps,
                                        otdoaOrGPS, cellID }


UE-Positioning-GPS-MeasurementResults ::=               SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            referenceIdentity               PrimaryCPICH-Info----------OPTIONAL
        },
        tdd                             SEQUENCE {
            referenceIdentity               CellParametersID----------OPTIONAL
        }
    }-------------------------------------------------------------------OPTIONAL,
    referenceSFN                    ReferenceSFN                        OPTIONAL,
    gps-TOW-1msec                   GPS-TOW-1msec,
    gps-TOW-rem-usec                GPS-TOW-rem-usec                    OPTIONAL,
    gps-MeasurementParamList        GPS-MeasurementParamList
}


UE-Positioning-GPS-ReferenceTime ::=            SEQUENCE {
    gps-Week                        INTEGER (0..1023),
```

```
    gps-tow-1msec                       GPS-TOW-1msec,
    gps-tow-rem-usec                    GPS-TOW-rem-usec                    OPTIONAL,
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            referenceIdentity               PrimaryCPICH-Info               OPTIONAL
        },
        tdd                             SEQUENCE {
            referenceIdentity               CellParametersID                OPTIONAL
        }
    }                                                                       OPTIONAL,
    sfn                                 INTEGER (0..4095)                   OPTIONAL,
    sfn-tow-Uncertainty                 SFN-TOW-Uncertainty                 OPTIONAL,
    nodeBClockDrift                     NodeB-ClockDrift                    OPTIONAL,
    gps-TOW-AssistList                  GPS-TOW-AssistList                  OPTIONAL
}


UE-Positioning-ReportingQuantity ::=            SEQUENCE {
    methodType                          UE-Positioning-MethodType,
    positioningMethod                   PositioningMethod,
    responseTime                        UE-Positioning-ResponseTime,
    accuracy                            UE-Positioning-Accuracy                     OPTIONAL,
    gps-TimingOfCellWanted              BOOLEAN,
    multipleSets                        BOOLEAN,
    environmentCharacterisation         EnvironmentCharacterisation         OPTIONAL
}
```

```
UE-Positioning-PositionEstimateInfo ::=                 SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            referenceIdentity               PrimaryCPICH-Info           OPTIONAL
        },
        tdd                             SEQUENCE {
            referenceIdentity               CellParametersID            OPTIONAL
        }
    }                                                                   OPTIONAL,
    referenceSFN                        ReferenceSFN,               OPTIONAL,
    gps-tow-1msec                       GPS-TOW-1msec               OPTIONAL,
    gps-tow-rem-usec                    GPS-TOW-rem-usec            OPTIONAL,
    positionEstimate                    PositionEstimate
```

***** NEXT MODIFIED SECTION *****

14.7 UE positioning measurements

14.7.1 UE positioning measurement quantitiesy

The quantity to measure for UE positioning is dependent on the positioning method and the method type requested in the IE "UE positioning reporting quantity".

1 SFN-SFN observed time difference type 2, mandatory.

2 Rx-Tx time difference type 2, optional.

3 GPS timing of cell fames, optional.

The definition of other GPS measurements is not within the scope of this specification.

~~The quantity to measure for UE positioning is dependent on the location method and the method type requested in the IE "UE positioning reporting quantity". In case the OTDOA method is requested, the UE shall measure the following quantities disregarding of the method type used:~~

~~- SFN-SFN observed time difference~~

~~If the Assisted GPS method is requested, the UE has to request its internal GPS receiver to make measurements. The measurements to be made by the GPS receiver are not within the scope of this subclause.~~

~~If it is indicated in the IE "UE positioning reporting quantity" to report the GPS timing of the cell, the UE shall measure the following quantity:~~

- ~~UE GPS timing of cell frames for UE positioning~~

14.7.2 Void~~UE positioning reporting quantity~~

~~The quantity to report is also dependent on the location method and method type requested in the IE "UE positioning reporting quantity". If the method type is set to "UE based", the IE "UE positioning Position" has to be included in the report.~~

~~In case the method type is set to "UE assisted", the following IEs have to be included in the report:~~

- ~~IE "UE positioning OTDOA measurement" in case the OTDOA location method is requested.~~
- ~~IE "UE positioning GPS measurement" in case the GPS location method is requested.~~

14.7.3 UE positioning reporting events

In the UE positioning reporting criteria field in the Measurement Control messages, the UTRAN notifies the UE of which events should trigger a measurement report. UE positioning reporting events that can trigger a report are given below. The content of the measurement report is dependant on the location method and method type requested in the IE "UE positioning reporting quantity" of the Measurement Control message and is described in detail in [18].

14.7.3.1 Reporting Event 7a: The UE position changes more than an absolute threshold

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE changes its position compared to the last reported position more than a predefined threshold. This event is used for UE-based methods only.

14.7.3.2 Reporting Event 7b: SFN-SFN measurement changes more than an absolute threshold

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the SFN-SFN time difference measurement of any measured cell changes more than a predefined threshold. This event is primarily used for UE-assisted methods, but can be used also for UE-based methods.

14.7.3.3 Reporting Event 7c: GPS time and SFN time have drifted apart more than an absolute threshold

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the GPS Time Of Week and the SFN timer have drifted apart more than a predefined threshold. This event is primarily used for UE-assisted methods, but can be used also for UE-based methods.

3GPP TSG-RAN WG2 Meeting #22
Helsinki, Finland, 27th – 31st August

R2-012202

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 998** ⌘ ev **r1** ⌘ Current version: **4.1.0** ⌘

*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 of UE capabilities regarding Rx-Tx time difference type 2 measurement
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	04.09.01
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: ⌘

During RAN WG2/WG4 joint meeting in July, it was decided to keep the Rx-Tx time difference type 2 measurement optional according to RAN WG4s understanding.

Therefore, in order to enable a UE to indicate its capability to perform this measurement, an additional IE is added to the UE positioning capability.

Besides, currently the UTRAN is not able to request the UE to perform Rx-Tx time difference type 2 measurement on the reference cell. As already agreed at the last meeting, this is resolved by adding a new value "Cell ID" to the IE Positioning Method.

The IE 'UE positioning position estimate info' allows the UE with the capability to send a GPS time stamp, plus a reference SFN at which the GPS time stamp is valid. Currently within the ASN.1, the reference SFN is mandatory but the GPS time stamp is optional, but the reference SFN is meaningless without the GPS time stamp.

Current the tabular description (10.3.7.93, and 10.3.7.109) uses CV for the GPS time stamp IEs but the condition described relates to a number of factors outside the message contents. This is not in line with the guidelines that it should be possible to evaluate the condition based on the contents of the message.

Need for choice is missing in 10.3.7.93, 10.3.7.96, 10.3.7.109.

Isolated impact:

Only UE positioning is impacted. The additional IE is added in an extension container, so that implementations of earlier releases are not impacted.

The addition of cell ID to IE Positioning Method has no isolated impact, because only 3 of 4 possible values have been used up to now.

Making the reference SFN optional in table 10.3.7.109 is a correction to unambiguously specify functionality. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality.

Summary of change:	⌘	Capability to perform Rx-Tx time difference type2 measurement is added to the UE Radio access capabilities. For sections 10.3.7.93, 10.3.7.96, 10.3.7.109, the choice need is specified as OP in Tabular and the ASN.1 is modified accordingly.
Consequences if not approved:	⌘	UE positioning feature may be implemented in different ways, resulting in unpredictable UE behaviour

Clauses affected:	⌘	8.6.7.19 (new), 8.6.7.19.1 (new), 8.6.7.19.2 (new), 10.3.3.45, 10.3.7.93, 10.3.7.96, 10.3.7.109, 10.3.7.111, 11.2, 11.3, 14.7.1, 14.7.2, 14.7.3		
Other specs affected:	⌘	Other core specifications Test specifications O&M Specifications	⌘	25.331 v3.7.0, CR 997r2
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.

8.6.7.19 UE positioning

8.6.7.19.1 UE positioning reporting quantity

The UE shall

- ignore IE “Multiple Sets”;
- ignore IE “Response Time”;
- if IE “Accuracy” is included, the UE should try to achieve the requested positioning accuracy with 67% confidence
- if IE “Positioning Methods” is set to “Cell ID”,
  - perform the Rx-Tx time difference type 2 measurement on the reference cell indicated in the OTDOA assistance data
- if the IE "Method Type" is set to "UE based":
  - if the IE "Positioning Methods" is set to "GPS":
    - when a measurement report is triggered, include the IE "UE positioning position estimate info" in the measurement report and set the contents of the IE as follows:
      - if the UE supports the capability to provide the GPS timing of the cell, and
      - if the IE "GPS timing of Cell wanted" is set to true:
        - include the IE "Primary CPICH Info" for FDD or the IE "cell parameters id" for TDD; and
        - include the IE "Reference SFN", the IE "GPS TOW msec"; and
        - the UE may include the IE "GPS TOW rem usec".
  - if the IE "Positioning Methods" is set to "OTDOA":
    - when a measurement report is triggered, include the IE "UE positioning position estimate info" in the measurement report
- if the IE "Method Type" is set to "UE assisted":
  - if the IE "Positioning Methods" is set to "GPS":
    - when a measurement report is triggered, include the IE "UE positioning GPS measured results" in the measurement report and set the contents of the IE as follows:
      - if the UE supports the capability to provide the GPS timing of the cell, and
      - if the IE "GPS timing of Cell wanted" is set to true:
        - include the IE "Primary CPICH Info" for FDD or the IE "cell parameters id" for TDD; and
        - include the IE "Reference SFN", the IE "GPS TOW msec"; and
        - the UE may include the IE "GPS TOW rem usec".
      - if the UE does not support the capability to provide the GPS timing of the cell:
        - include the IE “GPS TOW msec”.
  - if the IE "Positioning Methods" is set to "OTDOA":
    - when a measurement report is triggered, include the IE "UE positioning OTDOA measured results" in the measurement report

The UE shall perform the following consistency check:

- if UE, according to its capabilities, does not support UE based OTDOA and if IE “Positioning Methods” is set to “OTDOA” and if IE “Method Type” is set to “UE based”,

  - act as specified in section 8.4.1.4

- if UE, according to its capabilities, does not support UE based GPS and if IE “Positioning Methods” is set to “GPS” and if IE “Method Type” is set to “UE based”,

  - act as specified in section 8.4.1.4

- if UE, according to its capabilities, does not support UE assisted GPS and if IE “Positioning Methods” is set to “GPS” and if IE “Method Type” is set to “UE assisted”,

  - act as specified in section 8.4.1.4

- if UE, according to its capabilities, does not support UE based positioning and if IE “Positioning Methods” is set to “OTDOAorGPS” and if IE “Method Type” is set to “UE based”,

  - act as specified in section 8.4.1.4

- if UE, according to its capabilities, does not support Rx-Tx time difference type 2 measurement and if IE “Positioning Methods” is set to “Cell ID”,

  - act as specified in section 8.4.1.4

8.6.7.19.2 UE positioning OTDOA assistance data

If IE “UE positioning OTDOA reference cell info” is received in System Information Block 15.4 or in the MEASUREMENT CONTROL message, the UE shall update the variable UE_POSITIONING_OTDOA_DATA accordingly. The UE shall:

- store received cell information in the UE positioning reference cell info in the variable UE_POSITIONING_OTDOA_DATA, overwriting any existing information

If IE “UE positioning OTDOA neighbour cell list” is received in System Information Block 15.4 or in the MEASUREMENT CONTROL message, the UE shall update the variable UE_POSITIONING_OTDOA_DATA accordingly. The UE shall:

- store received cell information in the neighbour cell info list in the variable CELL_INFO_LIST, overwriting any existing information

If, according to its capabilities, UE does not support IPDLs and if IE “IPDL parameters” is received for the reference or any of the neighbour cells, the UE shall

- ignore this IE.

If IE “UE positioning measurement” is received in the MEASUREMENT CONTROL message, the UE shall also perform the following consistency checks:

- if IE “Positioning Methods” is set to “OTDOA” or “Cell ID” and

  - if IE “UE positioning OTDOA reference cell info” is not included and if UE positioning OTDOA reference cell info in variable UE_POSITIONING_OTDOA_DATA is empty

    - set the variable CONFIGURATION_INCOMPLETE to TRUE;

- if IE “Positioning Methods” is set to “OTDOA” and

  - if IE “UE positioning OTDOA neighbour cell list” is not included and if less than two neighbour cells are stored in UE positioning OTDOA neighbour cell info list in variable UE_POSITIONING_OTDOA_DATA

    - set the variable CONFIGURATION_INCOMPLETE to TRUE;

  - if IE “Method Type” is set to “UE based” and

- if IE “UE positioning OTDOA reference cell info” is included and if IE “Cell Position” for the reference cell is not included, the UE shall,

  - set the variable CONFIGURATION_INCOMPLETE to TRUE;

- if the IE ”UE positioning OTDOA neighbour cell list” is included and if cell position of less than two neighbour cells of the cells included in this IE and stored in variable UE_POSITIONING_OTDOA_DATA are different and if those cell positions are not different to the one of the reference cell stored in variable UE_POSITIONING_OTDOA_DATA, the UE shall,

  - set the variable CONFIGURATION_INCOMPLETE to TRUE;

- if the IE ”UE positioning OTDOA neighbouring cell list” is included and only two neighbour cells are included or stored in variable UE_POSITIONING_OTDOA_DATA and if the IE “Round Trip Time” is neither included for the neighbour cells nor for the reference cell info, the UE shall,

  - set the variable CONFIGURATION_INCOMPLETE to TRUE;

10.3.3.45 UE positioning capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Standalone location method(s) supported	MP		Boolean	Defines if a UE can measure its location by some means unrelated to UTRAN TRUE means supported
UE based OTDOA supported	MP		Boolean	TRUE means supported
Network Assisted GPS support	MP		Enumerated ('Network based', 'UE based', 'Both', 'None')	Defines if the UE supports network based or UE based GPS methods.
GPS reference time capable	MP		Boolean	Defines if a UE has the capability to measure GPS reference time as defined in [7]. TRUE means capable
Support for IPDL	MP		Boolean	Defines if a UE has the capability to use IPDL to enhance its 'SFN-SFN observed time difference –type 2' measurement. TRUE means supported
Support for Rx-Tx time difference type2 measurement	MP		Boolean	TRUE means supported

10.3.7.93 UE positioning GPS measured results

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE *mode*	OP			
>FDD				
>>Primary CPICH Info	~~OP~~MP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	~~OP~~MP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
Reference SFN	OP		Integer(0..4095)	The SFN for which the location is valid
GPS TOW msec	MP		Integer(0..6.048*10^8-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit). This time is the GPS TOW measured by the UE. If the Reference SFN field is present it is the ms flank closest to the beginning of that frame. GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec
GPS TOW rem usec	~~CV-capability and request~~OP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
Measurement Parameters	MP	1 to <maxSat>		
>Satellite ID	MP		Enumerated(0..63)	
>C/N_o	MP		Integer(0..63)	the estimate of the carrier-to-noise ratio of the received signal from the particular satellite used in the measurement. It is given in whole dBs. Typical levels observed by UE-based GPS units will be in the range of 20 – 50 dB.
>Doppler	MP		Integer(-32768..32768)	Hz, scale factor 0.2.
>Whole GPS Chips	MP		Integer(0..1023)	Unit in GPS chips
>Fractional GPS Chips	MP		Integer(0..(2^{10}-1))	Scale factor 2^{-10}
>Multipath Indicator	MP		Enumerated(NM, low, medium, high)	See note 1
>Pseudorange RMS Error	MP		Enumerated(range index 0..range index 63)	See note 2

~~Condition~~	~~Explanation~~
~~*Capability and request*~~	~~This field is included only if the UE has this capability *and* if it was requested in the UE positioning reporting quantity~~

NOTE 1: The following table gives the mapping of the multipath indicator field.

Value	Multipath Indication
NM	Not measured
Low	MP error < 5m
Medium	5m < MP error < 43m
High	MP error > 43m

NOTE 2: The following table gives the bitmapping of the Pseudorange RMS Error field.

Range Index	Mantissa	Exponent	Floating-Point value, x_i	Pseudorange value, P
0	000	000	0.5	P < 0.5
1	001	000	0.5625	0.5 <= P < 0.5625
I	X	Y	$0.5 * (1 + x/8) * 2^y$	x_{i-1} <= P < x_i
62	110	111	112	104 <= P < 112
63	111	111	--	112 <= P

10.3.7.96 UE positioning GPS reference time

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
GPS Week	MP		Integer(0..1023)	
GPS TOW msec	MP		Integer(0..6.048*10^8-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit).
GPS TOW rem usec	OP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000. GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec
CHOICE *mode*	OP			
>FDD				
>>Primary CPICH Info	~~OP~~MP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	~~OP~~MP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
SFN	OP		Integer(0..4095)	The SFN which the GPS TOW time stamps. SFN and GPS TOW msec and GPS TOW rem usec are included if relation GPS TOW/SFN is known to at least 10 μs.
SFN-TOW Uncertainty	OP		Enumerated (lessThan10, moreThan10)	This field indicates the uncertainty of the relation GPS TOW/SFN. lessThan10 means the relation is accurate to at least 10 ms.
Node B Clock Drift	OP		Real(-0.09375..0.09375 by step of 0.0125)	μsec/sec (ppm)
GPS TOW Assist	OP	1 to <maxSat>		
>SatID	MP		Enumerated(0..63)	
>TLM Message	MP		Bit string(14)	
>TLM Reserved	MP		Bit string(2)	
>Alert	MP		Boolean	
>Anti-Spoof	MP		Boolean	

10.3.7.109 UE positioning position estimate info

The purpose of this IE is to provide the position estimate from the UE to the network, if the UE is capable of determining its own position.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE *mode*	~~O~~P			
>FDD				
>>Primary CPICH Info	~~O~~PMP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	~~O~~PMP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
Reference SFN	~~M~~POP		Integer(0..4095)	The SFN for which the location is valid
GPS TOW msec	~~CV-Capability and request~~OP		Integer(0..$604800*10^8$-1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit). This time-stamps the beginning of the frame defined in Reference SFN GPS Time of Week in microseconds = 1000 * GPS TOW msec + GPS TOW rem usec
GPS TOW rem usec	~~CV-Capability and request~~OP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
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	

Condition	Explanation
~~*Capability and request*~~	~~This field is included only if the UE has this capability *and* if it was requested in the UE positioning reporting quantity and if the method was UE-based GPS~~

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, Cell ID)	
Response Time	MP		Integer(1,2,4 , 8, 16, 32, 64, 128)	in seconds
Accuracy	CV-*MethodType*		Bitstring(7)	The uncertainty is derived from the "uncertainty code" k by $r = 10*(1.1^k-1)$
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

11.2 PDU definitions

```
-- **************************************************
--
-- RRC CONNECTION SETUP COMPLETE
--
-- **************************************************

RRCConnectionSetupComplete ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        startList                       STARTList,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    --  Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- Non critical extensions
        v370NonCriticalExtensions           SEQUENCE {
            rrcConnectionSetupComplete-v370ext  RRCConnectionSetupComplete-v370ext,
            -- Reserved for future non critical extension
            nonCriticalExtensions           SEQUENCE {
                rrcConnectionSetupComplete-v380ext  RRCConnectionSetupComplete-v380ext,
                -- Reserved for future non critical extension
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

RRCConnectionSetupComplete-v370ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v370ext    UE-RadioAccessCapability-v370ext    OPTIONAL
}

RRCConnectionSetupComplete-v380ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v380ext    UE-RadioAccessCapability-v380ext    OPTIONAL
}


-- **************************************************
--
-- UE CAPABILITY INFORMATION
--
-- **************************************************

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier           OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList
    OPTIONAL,
    -- Non critical extensions
        v370NonCriticalExtensions           SEQUENCE {
            ueCapabilityInformation-v370ext UECapabilityInformation-v370ext,
            -- Reserved for future non critical extension
            nonCriticalExtensions           SEQUENCE {
                ueCapabilityInformation-v380ext UECapabilityInformation-v380ext,
                -- Reserved for future non critical extension
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

UECapabilityInformation-v370ext::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v370ext        UE-RadioAccessCapability-v370ext
    OPTIONAL
```

```
}

UECapabilityInformation-v380ext::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v380ext        UE-RadioAccessCapability-v380ext
    OPTIONAL
}
```

11.3 Information element definitions

```
UE-Positioning-Capability ::=                   SEQUENCE {
    standaloneLocMethodsSupported       BOOLEAN,
    ue-BasedOTDOA-Supported             BOOLEAN,
    networkAssistedGPS-Supported        NetworkAssistedGPS-Supported,
    gps-ReferenceTimeCapable            BOOLEAN,
    supportForIPDL                      BOOLEAN
}

UE-RadioAccessCapability ::=        SEQUENCE {
    ics-Version                         ICS-Version,
    pdcp-Capability                     PDCP-Capability,
    rlc-Capability                      RLC-Capability,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability,
    physicalChannelCapability           PhysicalChannelCapability,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability,
    securityCapability                  SecurityCapability,
    ue-positioning-Capability           UE-Positioning-Capability,
    measurementCapability               MeasurementCapability       OPTIONAL
}

UE-RadioAccessCapability-v370ext::=     SEQUENCE {
    ue-RadioAccessCapabBandFDDList      UE-RadioAccessCapabBandFDDList
}

UE-RadioAccessCapability-v380ext::=     SEQUENCE {
    ue-PositioningCapabilityExt         UE-PositioningCapabilityExt
}


UE-PositioningCapabilityExt::=          SEQUENCE {
    rx-tx-TimeDifferenceType2Capable    BOOLEAN
}

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

PositioningMethod ::=               ENUMERATED {
                                        otdoa,
                                        gps,
                                        otdoaOrGPS, cellID }


UE-Positioning-GPS-MeasurementResults ::=               SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            referenceIdentity               PrimaryCPICH-Info           OPTIONAL
        },
        tdd                             SEQUENCE {
            referenceIdentity               CellParametersID            OPTIONAL
        }
    }                                                                   OPTIONAL,
    referenceSFN                    ReferenceSFN                        OPTIONAL,
    gps-TOW-1msec                   GPS-TOW-1msec,
    gps-TOW-rem-usec                GPS-TOW-rem-usec                    OPTIONAL,
    gps-MeasurementParamList        GPS-MeasurementParamList
}


UE-Positioning-GPS-ReferenceTime ::=            SEQUENCE {
    gps-Week                        INTEGER (0..1023),
    gps-tow-1msec                   GPS-TOW-1msec,
```

```
    gps-tow-rem-usec                GPS-TOW-rem-usec                OPTIONAL,
    modeSpecificInfo              CHOICE {
        fdd                           SEQUENCE {
            referenceIdentity             PrimaryCPICH-Info                OPTIONAL
        },
        tdd                           SEQUENCE {
            referenceIdentity             CellParametersID                 OPTIONAL
        }
    }                                                                      OPTIONAL,
    sfn                           INTEGER (0..4095)                        OPTIONAL,
    sfn-tow-Uncertainty           SFN-TOW-Uncertainty                      OPTIONAL,
    nodeBClockDrift               NodeB-ClockDrift                         OPTIONAL,
    gps-TOW-AssistList            GPS-TOW-AssistList                       OPTIONAL
}


UE-Positioning-ReportingQuantity ::=          SEQUENCE {
    methodType                    UE-Positioning-MethodType,
    positioningMethod             PositioningMethod,
    responseTime                  UE-Positioning-ResponseTime,
    accuracy                      UE-Positioning-Accuracy                  OPTIONAL,
    gps-TimingOfCellWanted        BOOLEAN,
    multipleSets                  BOOLEAN,
    environmentCharacterisation   EnvironmentCharacterisation      OPTIONAL
}


UE-Positioning-PositionEstimateInfo ::=               SEQUENCE {
    modeSpecificInfo              CHOICE {
        fdd                           SEQUENCE {
            referenceIdentity             PrimaryCPICH-Info          OPTIONAL
        },
        tdd                           SEQUENCE {
            referenceIdentity             CellParametersID           OPTIONAL
        }
    }                                                                  OPTIONAL,
    referenceSFN                  ReferenceSFN,                        OPTIONAL,
    gps-tow-1msec                 GPS-TOW-1msec                    OPTIONAL,
    gps-tow-rem-usec              GPS-TOW-rem-usec                 OPTIONAL,
    positionEstimate              PositionEstimate
```

***** NEXT MODIFIED SECTION *****

14.7 UE positioning measurements

14.7.1 UE positioning measurement quantitiesy

The quantity to measure for UE positioning is dependent on the positioning method and the method type requested in the IE "UE positioning reporting quantity".

1 SFN-SFN observed time difference type 2, mandatory.

2 Rx-Tx time difference type 2, optional.

3 GPS timing of cell fames, optional.

The definition of other GPS measurements is not within the scope of this specification.

~~The quantity to measure for UE positioning is dependent on the location method and the method type requested in the IE "UE positioning reporting quantity". In case the OTDOA method is requested, the UE shall measure the following quantities disregarding of the method type used:~~

~~- SFN-SFN observed time difference~~

~~If the Assisted GPS method is requested, the UE has to request its internal GPS receiver to make measurements. The measurements to be made by the GPS receiver are not within the scope of this subclause.~~

~~If it is indicated in the IE "UE positioning reporting quantity" to report the GPS timing of the cell, the UE shall measure the following quantity:~~

- UE GPS timing of cell frames for UE positioning

14.7.2 VoidUE positioning reporting quantity

The quantity to report is also dependent on the location method and method type requested in the IE "UE positioning reporting quantity". If the method type is set to "UE based", the IE "UE positioning Position" has to be included in the report.

In case the method type is set to "UE assisted", the following IEs have to be included in the report:

- IE "UE positioning OTDOA measurement" in case the OTDOA location method is requested.

- IE "UE positioning GPS measurement" in case the GPS location method is requested.

14.7.3 UE positioning reporting events

In the UE positioning reporting criteria field in the Measurement Control messages, the UTRAN notifies the UE of which events should trigger a measurement report. UE positioning reporting events that can trigger a report are given below. The content of the measurement report is dependant on the location method and method type requested in the IE "UE positioning reporting quantity" of the Measurement Control message and is described in detail in [18].

14.7.3.1 Reporting Event 7a: The UE position changes more than an absolute threshold

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE changes its position compared to the last reported position more than a predefined threshold. This event is used for UE-based methods only.

14.7.3.2 Reporting Event 7b: SFN-SFN measurement changes more than an absolute threshold

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the SFN-SFN time difference measurement of any measured cell changes more than a predefined threshold. This event is primarily used for UE-assisted methods, but can be used also for UE-based methods.

14.7.3.3 Reporting Event 7c: GPS time and SFN time have drifted apart more than an absolute threshold

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the GPS Time Of Week and the SFN timer have drifted apart more than a predefined threshold. This event is primarily used for UE-assisted methods, but can be used also for UE-based methods.

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th-31st August 2001

Tdoc r2-011910

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **999** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

*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 handling of IE 'Downlink info for each radio link'
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	21/08/2001
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: ⌘

Section 8.6.3.3 'Generic state transition rules depending on received information elements' specifies that the UE always enters the state according to "RRC State Indicator" and ignores IE's any that may be present and which relate only to a different RRC state. For example, the UE in Cell_FACH state ignores IEs only relating to a dedicated channel configuration.

However, section 8.6.6.4, contains a requirement that the presence of some IEs that only relevant to a dedicated channel configuration should not be ignored but instead be considered an invalid configuration. This is inconsistent with 8.6.3.3. and is an unnecessary configuration check.

Summary of change: ⌘

The text in 8.6.6.4 is changed so that IEs relating only to the dedicated channel configuration are ignored rather than causing an invalid configuration.

Isolated impact analysis:
Corrected functionality: Handling of physical channel IEs received in Cell_FACH state.

Correction to a function where the specification was contained a contradiction. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

Consequences if not approved: ⌘

Specification would have contradictory handling of physical channel information elements received in the UE. This could lead to different UE implementations behaving differently.

Clauses affected: ⌘ 8.6.6.4

Other specs affected: ⌘

☐ Other core specifications
☐ Test specifications
☐ O&M Specifications

⌘ 25.331 v4.1.0, CR 1000

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. ⌘

8.6.6.4 Downlink information for each radio link

If the IE "Downlink information for each radio link" is included in a received message, the UE shall:

- if the UE would enter CELL_DCH state according to subclause 8.6.3.3 applied on the received message:
  - if the IE "SCCPCH Information for FACH" is included; and
  - if the UE is in FDD mode and is not capable of simultaneous reception of DPCH and Secondary CCPCH:
    - set the variable UNSUPPORTED_CONFIGURATION to TRUE;
    - if the UE is in FDD mode and is capable of simultaneous reception of DPCH and SCCPCH:
      - start to receive the indicated Secondary CCPCH;
    - if the UE is in TDD mode and shared transport channels are assigned to the UE:
      - start to receive the indicated Secondary CCPCH;
    - if the UE is in TDD mode and no shared transport channels are assigned to the UE:
      - set the variable UNSUPPORTED_CONFIGURATION to TRUE;
  - act on the other IEs contained in the IE "Downlink information for each radio link" as specified in subclause 8.6 applied on this radio link;
- if the UE would enter either the CELL_FACH, CELL_PCH or URA_PCH state according to subclause 8.6.3.3 applied on the received message:
  - if the received message is CELL UPDATE CONFIRM:
    - set the variable INVALID_CONFIGURATION to TRUE;
  - if the received message is any other message than CELL UPDATE CONFIRM; and
  - if other IEs than the IE "Primary CPICH info" (for FDD) or the IE "Primary CCPCH info" (for TDD) are included in the IE "Downlink information for each radio link":
    - ~~set the variable INVALID_CONFIGURATION to TRUE~~ignore these IEs;
  - act on the other IEs contained in the IE "Downlink information for each radio link" as specified in subclause 8.6 applied on this radio link.

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th-31st August 2001

Tdoc R2-012141

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **1000** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

*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 handling of IE 'Downlink info for each radio link'
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	21/08/2001
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: ⌘

Section 8.6.3.3 'Generic state transition rules depending on received information elements' specifies that the UE always enters the state according to "RRC State Indicator" and ignores IE's any that may be present and which relate only to a different RRC state. For example, the UE in Cell_FACH state ignores IEs only relating to a dedicated channel configuration.

However, section 8.6.6.4, contains a requirement that the presence of some IEs that only relevant to a dedicated channel configuration should not be ignored but instead be considered an invalid configuration. This is inconsistent with 8.6.3.3. and is an unnecessary configuration check.

Summary of change: ⌘

The text in 8.6.6.4 is changed so that IEs relating only to the dedicated channel configuration are ignored rather than causing an invalid configuration.

Isolated impact analysis:
Corrected functionality: Handling of physical channel IEs received in Cell_FACH state.

Correction to a function where the specification was contained a contradiction. Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

Consequences if not approved: ⌘

Specification would have contradictory handling of physical channel information elements received in the UE. This could lead to different UE implementations behaving differently.

Clauses affected: ⌘ 8.6.6.4

Other specs affected: ⌘

☐ Other core specifications
☐ Test specifications
☐ O&M Specifications

⌘ 25.331 v4.1.0, CR 999

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. ⌘

8.6.6.4 Downlink information for each radio link

If the IE "Downlink information for each radio link" is included in a received message, the UE shall:

- if the UE would enter CELL_DCH state according to subclause 8.6.3.3 applied on the received message:
  - if the IE "SCCPCH Information for FACH" is included; and
  - if the UE is in FDD mode and is not capable of simultaneous reception of DPCH and Secondary CCPCH:
    - set the variable UNSUPPORTED_CONFIGURATION to TRUE;
    - if the UE is in FDD mode and is capable of simultaneous reception of DPCH and SCCPCH:
      - start to receive the indicated Secondary CCPCH;
    - if the UE is in TDD mode and shared transport channels are assigned to the UE:
      - start to receive the indicated Secondary CCPCH;
    - if the UE is in TDD mode and no shared transport channels are assigned to the UE:
      - set the variable UNSUPPORTED_CONFIGURATION to TRUE;
  - act on the other IEs contained in the IE "Downlink information for each radio link" as specified in subclause 8.6 applied on this radio link;
- if the UE would enter either the CELL_FACH, CELL_PCH or URA_PCH state according to subclause 8.6.3.3 applied on the received message:
  - if the received message is CELL UPDATE CONFIRM:
    - set the variable INVALID_CONFIGURATION to TRUE;
  - if the received message is any other message than CELL UPDATE CONFIRM; and
  - if other IEs than the IE "Primary CPICH info" (for FDD) or the IE "Primary CCPCH info" (for TDD) are included in the IE "Downlink information for each radio link":
    - ~~set the variable INVALID_CONFIGURATION to TRUE~~ignore these IEs;
  - act on the other IEs contained in the IE "Downlink information for each radio link" as specified in subclause 8.6 applied on this radio link.

3GPP TSG-RAN WG2, Meeting #23
Helsinki, Finland, August 26th-31th, 2001

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CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **1003** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

*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:	⌘	Redundant IE in Traffic volume measurement system information
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	8.26.2001
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:	⌘	There is an inconsistency between tabular and ASN.1 description for the IE "Traffic volume measurement system information". Current ASN.1 description allows the IE "TrafficVolumeReportingCriteria", which is used to specify traffic volume measurement event conditions, to be specified twice in same IE. It is proposed to align ASN.1 to tabular description here. Note: Current structure of "TrafficVolumeMeasSysinfo" is made after implementing R2-001023 and R2-001095, and unchanged since then. Both CRs are attempting to include a function to specify traffic volume measurement events in system information, but in two different ways. Isolated impact analysis: There is no impact to UEs or network whose implementation is in line with tabular description. They will work as intended.
Summary of change:	⌘	Note is added to "trafficVolumeMeasRepCriteria" to indicate that this IE shall not be used in this version of the protocol.
Consequences if not approved:	⌘	UEs may look at two separate IEs for traffic volume measurement event conditions, and that may lead to unpredictable behavior, since error handling description is missing for the case when two conflicting condition is specified.

Clauses affected:	⌘	11.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v4.1.0, CR 1004
Other comments:	⌘			

How to create CRs using this form:

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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://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.

11.3 Information element definitions

```
.
.
.

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

TrafficVolumeMeasSysInfo ::=        SEQUENCE {
    trafficVolumeMeasurementID          MeasurementIdentity         DEFAULT 4,
    trafficVolumeMeasurementObjectList  TrafficVolumeMeasurementObjectList  OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity      TrafficVolumeReportingQuantity      OPTIONAL,
    ~~trafficVolumeMeasRepCriteria~~dummy       TrafficVolumeReportingCriteria      OPTIONAL,
    -- Above IE is not used in this version of protocol
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteriaSysInf                TrafficVolumeReportCriteriaSysInfo
}

TrafficVolumeReportCriteriaSysInfo ::=  CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

TrafficVolumeReportingCriteria ::= SEQUENCE {
    transChCriteriaList                 TransChCriteriaList                 OPTIONAL
}
```

3GPP TSG-RAN WG2, Meeting #23
Helsinki, Finland, August 26th-31th, 2001

Tdoc R2-012068

CR-Form-v4

CHANGE REQUEST

⌘ **25.331 CR 1004** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

*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:	⌘	Redundant IE in Traffic volume measurement system information
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	8.26.2001
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: ⌘ Shadow CR to CR1003 for R99

There is an inconsistency between tabular and ASN.1 description for the IE "Traffic volume measurement system information". Current ASN.1 description allows the IE "TrafficVolumeReportingCriteria", which is used to specify traffic volume measurement event conditions, to be specified twice in same IE. It is proposed to align ASN.1 to tabular description here.

Note: Current structure of "TrafficVolumeMeasSysinfo" is made after implementing R2-001023 and R2-001095, and unchanged since then. Both CRs are attempting to include a function to specify traffic volume measurement events in system information, but in two different ways.

Isolated impact analysis: There is no impact to UEs or network whose implementation is in line with tabular description. They will work as intended.

Summary of change: ⌘ Note is added to "trafficVolumeMeasRepCriteria" to indicate that this IE shall not be used in this version of the protocol.

Consequences if not approved: ⌘ UEs may look at two separate IEs for traffic volume measurement event conditions, and that may lead to unpredictable behavior, since error handling description is missing for the case when two conflicting condition is specified.

Clauses affected: ⌘ 11.3

Other specs affected: ⌘
☐ Other core specifications ⌘ 25.331 v3.7.0, CR 1003
☐ Test specifications
☐ O&M Specifications

Other comments: ⌘

How to create CRs using this form:
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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.

11.3 Information element definitions

```
.
.
.

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

TrafficVolumeMeasSysInfo ::=        SEQUENCE {
    trafficVolumeMeasurementID          MeasurementIdentity         DEFAULT 4,
    trafficVolumeMeasurementObjectList  TrafficVolumeMeasurementObjectList  OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity      TrafficVolumeReportingQuantity      OPTIONAL,
    ~~trafficVolumeMeasRepCriteria~~dummy       TrafficVolumeReportingCriteria      OPTIONAL,
    -- Above IE is not used in this version of protocol
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteriaSysInf                TrafficVolumeReportCriteriaSysInfo
}

TrafficVolumeReportCriteriaSysInfo ::=  CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

TrafficVolumeReportingCriteria ::= SEQUENCE {
    transChCriteriaList                 TransChCriteriaList                 OPTIONAL
}
```

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th - 31th August 2001

Tdoc R2-011917

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **1005** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

*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:	⌘	Editorial corrections
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	24 August 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: ⌘

1. Primitive incorrectly specified.
2. In the tabular description in 'intra-frequency cell info list', an IE is termed 'cell for measurement', however there are various references to the IE 'cells for measurement'; e.g. section 8.6.7.3.
3. Inconsistency between ASN.1 and tabular in PUSCH system information IE.
4. Error in ASN.1 in PUSCH-CapacityAllocationInfo.

Summary of change: ⌘

1. In 8.5.12 it states that PRACH partitioning is provided to PHY using the CPHY-TrCH-CONFIG-REQ primitive. This is incorrect; the CPHY-RL-CONFIG-REQ primitive is used.
2. In 10.3.7.33 the IE 'cell for measurement' is modified to 'cells for measurement'.
3. In the IE group PUSCH system information, ASN.1 indicates that TFCS is optional, however tabular form indicates that this IE is mandatory. The tabular form is corrected.
4. In ASN.1 IE group 'PUSCH-CapacityAllocationInfo' the IE 'pdsch-AllocationPeriodInfo' should read 'pusch-AllocationPeriodInfo'. It is corrected.

Isolated Impact Analysis:

Correction to a function 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.

The CR intends to clarify behaviour that has very likely been assumed in most implementations.

Consequences if not approved:	⌘	Erroneous interpretation of the standard

Clauses affected:	⌘	8.5.12, 10.3.6.66, 10.3.7.33, 11.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.331 v4.1.0, CR 1006
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.

8.5.12 Establishment of Access Service Classes

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

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

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

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

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

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

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

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

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

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

10.3.7.33 Intra-frequency cell info list

Contains the measurement object information for an intra-frequency measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *Intra-frequency cell removal*	OP			
>Remove all intra-frequency cells				No data
>Remove some intra-frequency cells				
>>Removed intra-frequency cells	MP	1 to <maxCell Meas>		
>>>Intra-frequency cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no intra-frequency cells				
New intra-frequency cell	OP	1 to <maxCell Meas>		This information element must be present when "Intra-frequency cell info list" is included in the system information
>Intra-frequency cell id	MD		Integer(0 .. <maxCellMeas> - 1)	
>Cell info	MP		Cell info 10.3.7.2	
Cells for measurement	CV-*BCHopt*	1 to <maxCell Meas>		
>Intra-frequency cell id	MP		Integer(0 .. <maxCellMeas>-1)	

Condition	Explanation
BCHopt	This IE is not needed when sent in SYSTEM INFORMATION. Otherwise, the IE is Optional

10.3.6.66 PUSCH system information

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PUSCH information	MP	1 to <maxPUSCH>		
>PUSCH Identity	MP		Integer(1..HiPUSCHIdentities)	
>PUSCH info	MP		PUSCH info 10.3.6.63	
>SFN Time Info	CH-*Block17*		SFN Time Info 10.3.6.75	
>USCH TFS	OP		Transport format set 10.3.5.23	
>USCH TFCS	~~MP~~OP		Transport Format Combination Set 10.3.5.20	

Condition	Explanation
Block17	This IE is absent in System Information Block 17. Otherwise it is optional.

11.3 Information element definitions

---------- break ----------

```
PUSCH-CapacityAllocationInfo ::=    SEQUENCE {
    pusch-Allocation                    CHOICE {
        pusch-AllocationPending             NULL,
        pusch-AllocationAssignment          SEQUENCE {
            pusch-AllocationPeriodInfo          AllocationPeriodInfo,
            pusch-PowerControlInfo              UL-TargetSIR                OPTIONAL,
            tfcs-ID                             TFCS-IdentityPlain          DEFAULT 1,
            configuration                       CHOICE {
                old-Configuration                   SEQUENCE {
                    pusch-Identity                      PUSCH-Identity
                },
                new-Configuration                   SEQUENCE {
                    pusch-Info                          PUSCH-Info,
                    pusch-Identity                      PUSCH-Identity      OPTIONAL
                }
            }
        }
    }
}
```

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27th - 31th August 2001

Tdoc R2-012108

CR-Form-v4

CHANGE REQUEST

⌘ **25.331** **CR** **1006** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

*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:	⌘	Editorial corrections
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	30 August 2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
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Reason for change: ⌘

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3. Inconsistency between ASN.1 and tabular in PUSCH system information IE.
4. Error in ASN.1 in PUSCH-CapacityAllocationInfo.

Summary of change: ⌘

1. In 8.5.12 it states that PRACH partitioning is provided to PHY using the CPHY-TrCH-CONFIG-REQ primitive. This is incorrect; the CPHY-RL-CONFIG-REQ primitive is used.
2. In 10.3.7.33 the IE 'cell for measurement' is modified to 'cells for measurement'.
3. In the IE group PUSCH system information, ASN.1 indicates that TFCS is optional, however tabular form indicates that this IE is mandatory. The tabular form is corrected.
4. In ASN.1 IE group 'PUSCH-CapacityAllocationInfo' the IE 'pdsch-AllocationPeriodInfo' should read 'pusch-AllocationPeriodInfo'. It is corrected.

Consequences if not approved: ⌘ The affected functions would not be correctly specified

Clauses affected: ⌘ 8.5.12, 10.3.6.66, 10.3.7.33, 11.3

Other specs affected: ⌘
☐ Other core specifications ⌘ 25.331 v3.7.0, CR 1005
☐ Test specifications
☐ O&M Specifications

Other comments: ⌘

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

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>>>Intra-frequency cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no intra-frequency cells				
New intra-frequency cell	OP	1 to <maxCell Meas>		This information element must be present when "Intra-frequency cell info list" is included in the system information
>Intra-frequency cell id	MD		Integer(0 .. <maxCellMeas> - 1)	
>Cell info	MP		Cell info 10.3.7.2	
Cells for measurement	CV-*BCHopt*	1 to <maxCell Meas>		
>Intra-frequency cell id	MP		Integer(0 .. <maxCellMeas>-1)	

Condition	Explanation
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10.3.6.66 PUSCH system information

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>PUSCH Identity	MP		Integer(1..HiPUSCHIdentities)	
>PUSCH info	MP		PUSCH info 10.3.6.63	
>SFN Time Info	CH-*Block17*		SFN Time Info 10.3.6.75	
>USCH TFS	OP		Transport format set 10.3.5.23	
>USCH TFCS	~~MP~~OP		Transport Format Combination Set 10.3.5.20	

Condition	Explanation
Block17	This IE is absent in System Information Block 17. Otherwise it is optional.

11.3 Information element definitions

```
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    pusch-Allocation                    CHOICE {
        pusch-AllocationPending             NULL,
        pusch-AllocationAssignment          SEQUENCE {
            pusch-AllocationPeriodInfo          AllocationPeriodInfo,
            pusch-PowerControlInfo              UL-TargetSIR                OPTIONAL,
            tfcs-ID                             TFCS-IdentityPlain          DEFAULT 1,
            configuration                       CHOICE {
                old-Configuration                   SEQUENCE {
                    pusch-Identity                      PUSCH-Identity
                },
                new-Configuration                   SEQUENCE {
                    pusch-Info                          PUSCH-Info,
                    pusch-Identity                      PUSCH-Identity      OPTIONAL
                }
            }
        }
    }
}

PUSCH-CapacityAllocationInfo-r4 ::= SEQUENCE {
    pusch-Allocation                    CHOICE {
        pusch-AllocationPending             NULL,
        pusch-AllocationAssignment          SEQUENCE {
            pusch-AllocationPeriodInfo          AllocationPeriodInfo,
            pusch-PowerControlInfo              PUSCH-PowerControlInfo-r4   OPTIONAL,
            tfcs-Identity                       TFCS-IdentityPlain          OPTIONAL,
            configuration                       CHOICE {
                old-Configuration                   SEQUENCE {
                    pusch-Identity                      PUSCH-Identity
                },
                new-Configuration                   SEQUENCE {
                    pusch-Info                          PUSCH-Info-r4,
                    pusch-Identity                      PUSCH-Identity      OPTIONAL
                }
            }
        }
    }
}
```