

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

**RP-010544**

**Title:** Agreed CRs (Release '99 and Rel-4 category A) to TS 25.331 (1)

**Source:** TSG-RAN WG2

**Agenda item:** 8.2.3

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-012043	agreed	25.331	0869	3	R99	UL Transport Channel Type Correction	F	3.7.0	3.8.0
R2-012044	agreed	25.331	0870		Rel-4	UL Transport Channel Type Correction	A	4.1.0	4.2.0
R2-011995	agreed	25.331	0907	1	R99	Guidelines concerning conditions, spares, defaults and correction of inconsistencies	F	3.7.0	3.8.0
R2-012074	agreed	25.331	0908		Rel-4	Guidelines concerning conditions, spares, defaults and correction of inconsistencies	A	4.1.0	4.2.0
R2-012045	agreed	25.331	0909	1	R99	Correction to TDD DL DPCH Common Timeslot Info	F	3.7.0	3.8.0
R2-012046	agreed	25.331	0910		Rel-4	Correction to TDD DL DPCH Common Timeslot Info	A	4.1.0	4.2.0
R2-012047	agreed	25.331	0911	1	R99	TDD System Information Update in Cell_DCH	F	3.7.0	3.8.0
R2-012048	agreed	25.331	0912		Rel-4	TDD System Information Update in Cell_DCH	A	4.1.0	4.2.0
R2-012049	agreed	25.331	0913	1	R99	Editorial Corrections	F	3.7.0	3.8.0
R2-012050	agreed	25.331	0914		Rel-4	Editorial Corrections	A	4.1.0	4.2.0
R2-012051	agreed	25.331	0915	1	R99	UL DPCH Power Control Info in TDD	F	3.7.0	3.8.0
R2-012052	agreed	25.331	0916		Rel-4	UL DPCH Power Control Info in TDD	A	4.1.0	4.2.0
R2-012053	agreed	25.331	0917	1	R99	CN-originated paging in CELL_PCH and URA_PCH state	F	3.7.0	3.8.0
R2-012054	agreed	25.331	0918		Rel-4	CN-originated paging in CELL_PCH and URA_PCH state	A	4.1.0	4.2.0
R2-012055	agreed	25.331	0919	1	R99	Corrections to UE variable handling	F	3.7.0	3.8.0
R2-012056	agreed	25.331	0920		Rel-4	Corrections to UE variable handling	A	4.1.0	4.2.0
R2-012057	agreed	25.331	0921	1	R99	Inter-frequency measurements	F	3.7.0	3.8.0
R2-012177	agreed	25.331	0922		Rel-4	Inter-frequency measurements	A	4.1.0	4.2.0
R2-012059	agreed	25.331	0923	1	R99	Inter-RAT measurements	F	3.7.0	3.8.0
R2-012178	agreed	25.331	0924		Rel-4	Inter-RAT measurements	A	4.1.0	4.2.0

## CHANGE REQUEST

⌘ **25.331** **CR 869** ⌘ ev **r3** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ UL Transport Channel Type Correction		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 28 Aug 2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		<i>Use <u>one</u> of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ Traffic Volume Measurements (TVM) may always be configured for the default UL transport channel. The tables and ASN1 currently list only RACH as a default in the UL. CPCH must also be added to Uplink Transport Channel Type in the TVM IEs to clearly indicate that TVM may be configured for CPCH.
<b>Summary of change:</b>	⌘ RACH is changed to RACHorCPCH in Uplink Transport Channel Type within TVM IEs.
<b>Consequences if not approved:</b>	⌘ RRC will not be able to efficiently manage UE uplink resource allocations without Traffic Volume Measurements for CPCH.

<b>Clauses affected:</b>	⌘ 10.3.7.69, 10.3.7.70, 10.3.7.72, 11.3		
<b>Other specs affected:</b>	⌘ <input checked="" type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 25.331v4.1.0, CR 870	
<b>Other comments:</b>	⌘		

### 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](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.

### 10.3.7.69 Traffic volume measurement event results

Contains the event result for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink transport channel type causing the event	MP		Enumerated(DCH,RACH,CPCH,USCH)	USCH is TDD only. CPCH is FDD only. RACH or CPCH is the currently configured default in the uplink
UL Transport Channel identity	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	
Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	

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

### 10.3.7.70 Traffic volume measurement object

Contains the measurement object information for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement objects	MP	1 to <maxTrCH>		
>Uplink transport channel type	MP		Enumerated(DCH,RACH,CPCH,USCH)	USCH is TDD only. CPCH is FDD only. RACH or CPCH is the currently configured default in the uplink
>UL Target Transport Channel ID	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	

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

### 10.3.7.72 Traffic volume measurement reporting criteria

Contains the measurement reporting criteria information for a traffic volume measurement.

Event 4a: Transport Channel Traffic Volume [15] exceeds an absolute threshold.

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH>		
>Uplink transport channel type	OP		Enumerated(DCH,RACH,CPCH,USCH)	USCH is TDD only. CPCH is FDD only. RACH or CPCH is the currently configured default in the uplink
>UL Transport Channel ID	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	
>Parameters required for each Event	OP	1 to <maxMeas perEvent>		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	
>>Reporting Threshold	MP		Enumerated(8,16,32,64,128,256,512,1024,2K,3K,4K,6K,8K,12K,16K,24K,32K,48K,64K,96K,128K,192K,256K,384K,512K,768K)	Threshold in bytes And N Kbytes = N*1024 bytes
>>Time to trigger	OP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>>Pending time after trigger	OP		Integer(250, 500, 1000, 2000, 4000, 8000, 16000)	Indicates the period of time during which it is forbidden to send any new measurement reports with the same Traffic volume event identity even if the triggering condition is fulfilled. Time in milliseconds
>>Tx interruption after trigger	OP		Integer (250, 500, 1000, 2000, 4000, 8000, 16000)	Time in milliseconds. Indicates how long the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.

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

### 11.3 Information element definitions

```

UL-TrCH-Identity ::=
    CHOICE{
        dch
        -- Default transport channel in the UL is either RACH or CPCH, but not both.
        rachorcpch
        usch
    }
    
```

## CHANGE REQUEST

⌘ **25.331** **CR 870** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ UL Transport Channel Type Correction		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 28 Aug 2001
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		<i>Use <u>one</u> of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ Traffic Volume Measurements (TVM) may always be configured for the default UL transport channel. The tables and ASN1 currently list only RACH as a default in the UL. CPCH must also be added to Uplink Transport Channel Type in the TVM IEs to clearly indicate that TVM may be configured for CPCH.		
<b>Summary of change:</b>	⌘ RACH is changed to RACHorCPCH in Uplink Transport Channel Type within TVM IEs.		
<b>Consequences if not approved:</b>	⌘ RRC will not be able to efficiently manage UE uplink resource allocations without Traffic Volume Measurements for CPCH.		

<b>Clauses affected:</b>	⌘ 10.3.7.69, 10.3.7.70, 10.3.7.72, 11.3		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications ⌘ <input type="checkbox"/> O&M Specifications	⌘ 25.331 v3.7.0, CR 869	
<b>Other comments:</b>	⌘		

### 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](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.

### 10.3.7.69 Traffic volume measurement event results

Contains the event result for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink transport channel type causing the event	MP		Enumerated(DCH,RACH,CPCH,USCH)	USCH is TDD only CPCH is FDD only RACH or CPCH is the currently configured default in the uplink
UL Transport Channel identity	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	
Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	

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

### 10.3.7.70 Traffic volume measurement object

Contains the measurement object information for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement objects	MP	1 to <maxTrCH>		
>Uplink transport channel type	MP		Enumerated(DCH,RACH,CPCH,USCH)	USCH is TDD only CPCH is FDD only RACH or CPCH is the currently configured default in the uplink
>UL Target Transport Channel ID	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	

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

### 10.3.7.72 Traffic volume measurement reporting criteria

Contains the measurement reporting criteria information for a traffic volume measurement.

Event 4a: Transport Channel Traffic Volume [15] exceeds an absolute threshold.

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



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH>		
>Uplink transport channel type	OP		Enumerated(DCH,RACH,CPCH,USCH)	USCH is TDD only CPCH is FDD only RACH or CPCH is the currently configured default in the uplink
>UL Transport Channel ID	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	
>Parameters required for each Event	OP	1 to <maxMeas perEvent>		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	
>>Reporting Threshold	MP		Enumerated(8,16,32,64,128,256,512,1024,2K,3K,4K,6K,8K,12K,16K,24K,32K,48K,64K,96K,128K,192K,256K,384K,512K,768K)	Threshold in bytes And N Kbytes = N*1024 bytes
>>Time to trigger	OP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>>Pending time after trigger	OP		Integer(250, 500, 1000, 2000, 4000, 8000, 16000)	Indicates the period of time during which it is forbidden to send any new measurement reports with the same Traffic volume event identity even if the triggering condition is fulfilled. Time in milliseconds
>>Tx interruption after trigger	OP		Integer (250, 500, 1000, 2000, 4000, 8000, 16000)	Time in milliseconds. Indicates how long the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.

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

### 11.3 Information element definitions

```

UL-TrCH-Identity ::=
    CHOICE{
        dch
        -- Default transport channel in the UL is either RACH or CPCH, but not both.
        rachorcpch
        usch
    }
    
```

## CHANGE REQUEST

⌘ **25.331 CR 907r1** ⌘ 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  Radio Access Network  Core Network

**Title:** ⌘ Guidelines concerning conditions, spares, defaults and correction of inconsistencies

**Source:** ⌘ TSG-RAN WG2

**Work item code:** ⌘ TEI

**Date:** ⌘ 22-08-2001

**Category:** ⌘ **F**

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.

**Release:** ⌘ R99

Use one of the following releases:

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

**Reason for change:** ⌘ The conditions need to be clarified to reduce ambiguity  
The guidelines for how to use conditional information elements, spares and defaults are not clear enough. Furthermore, guidelines are missing concerning how to handle inconsistencies when straightforward corrections are not feasible

**Summary of change:** ⌘ This CR proposes changes in the following areas:

Conditional IEs

- General error handling for conditional IEs is clarified
- The table in 10.1 explaining abbreviations used in the "Need" column aligned to a change in 25.921 in a companion CR
- Conditional expressions clarified for numerous IEs, in line with guidelines in 25.921 updated in a companion CR.

Spare values

- The general error handling and the protocol extension description have been updated in line with guidelines in 25.921 updated in a companion CR

Guidelines for handling inconsistencies when straightforward ASN.1 corrections are not feasible

- The handling of IEs removed from the ASN.1 by renaming it into "dummy" has been clarified in the ASN.1 section

Isolated impact

- The CR clarifies possible ambiguities. There is no impact for implementations that have assumed the behaviour proposed in this CR

**Consequences if not approved:** ⌘ Inconsistent use of conditions, spare values, defaults and correction of inconsistencies may cause ambiguities. This may again result in inter-operability problems

**Clauses affected:** ⌘ 9.1, 10.1, 10.1.1.1.1, 10.2.7, 10.2.8, 10.2.17, 10.2.26, 10.2.37, 10.2.42, 10.2.48,

	10.2.48.8.1, 10.2.48.8.8, 10.2.48.8.9, 10.2.48.8.18.3, 10.2.53, 10.2.60, 10.2.61, 10.3.2.1, 10.3.2.3, 10.3.2.5, 10.3.3.5, 10.3.3.7, 10.3.3.14, 10.3.3.19, 10.3.3.21, 10.3.3.21a, 10.3.3.24, 10.3.3.25, 10.3.3.40, 10.3.3.42, 10.3.4.2, 10.3.4.21, 10.3.5.1, 10.3.5.11, 10.3.5.23, 10.3.6.13, 10.3.6.18, 10.3.6.21, 10.3.6.33, 10.3.6.34, 10.3.6.41, 10.3.6.46, 10.3.6.66, 10.3.6.88, 10.3.6.90, 10.3.6.91, 10.3.6.92, 10.3.6.93, 10.3.7.10, 10.3.7.12, 10.3.7.19, 10.3.7.22, 10.3.7.30, 10.3.7.39, 10.3.7.59, 10.3.7.69, 10.3.7.70, 10.3.7.71, 10.3.7.72, 10.3.7.78, 10.3.7.80, 10.3.7.91, 10.3.7.93, 10.3.7.94, 10.3.7.100, 10.3.7.106, 10.3.7.109, 10.3.7.111, 10.3.8.5, 10.3.8.6, 11.0	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 25.331 v4.1.0, CR 908
<b>Other comments:</b>	⌘	

**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](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.

---

## 9 Handling of unknown, unforeseen and erroneous protocol data

### 9.1 General

This subclause specifies procedures for the handling of unknown, unforeseen, and erroneous protocol data by the receiving entity. These procedures are called "error handling procedures", but in addition to provide recovery mechanisms for error situations they define a compatibility mechanism for future extensions of the protocol.

The error handling procedures specified in this subclause shall apply to all RRC messages. When there is a specific handling for messages received on different logical channels this is specified.

For system information received on the BCCH, the error handling procedures are applied on the BCCH message SYSTEM INFORMATION, the re-assembled system information segments as well as the system information blocks (including the master information block and the scheduling blocks), with specific error handling as specified below.

When the UE receives an RRC message, it shall set the variable `PROTOCOL_ERROR_REJECT` to `FALSE` and then perform the checks in the order as defined below.

The procedures specified in clause 8 are applied only for the messages passing the checks as defined below, except when procedure specific handling is used to recover from the error.

The error cases specified in the following includes the handling upon reception of spares values. This behaviour also applies in case the actual value of the IE results from mapping the originally sent IE value. This handling also applies for spares that result after mapping of the original information element value. Moreover, in certain error cases, as specified in the following, default values apply. In this case, the default values specified within the ASN.1, the tabular and the procedure specifications apply.

## 9.5 Conditional information element error

If the UE receives an RRC message on the DCCH, BCCH, PCCH, or addressed to the UE on the CCCH or on the SHCCH, or sent to the UE in an RRC information container via a radio access technology other than UTRAN, for which the specified conditions for absence of a conditional IE are met and that IE is present, the UE shall:

- ignore the IE;
- treat the rest of the message as if the IE was not present.

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, or sent to the UE via a radio access technology other than UTRAN, for which the specified conditions for presence of a conditional IE are met and that IE is absent, the UE shall:

- set the variable `PROTOCOL_ERROR_REJECT` to `TRUE`;
- set the IE "Protocol error cause" in the variable `PROTOCOL_ERROR_INFORMATION` to "Conditional information element error";
- perform procedure specific error handling according to clause 8.

If the UE receives a system information block on the BCCH for which the specified conditions for presence of a conditional IE are met and that IE is absent, the UE shall:

- ignore the system information block.

If the UE receives an RRC message on the BCCH or PCCH for which the specified conditions for presence of a conditional IE are met and that IE is absent, the UE shall:

- ignore the message.

## 9.6 Unknown or unforeseen information element value, conditional information element

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, or sent to the UE in an RRC information container via a radio access technology other than UTRAN, for which the specified conditions for presence of a conditional IE are met, that IE is present, and that IE has a value, including choice, reserved for future extension (spare) or when the encoded IE does not result in any valid abstract syntax value [49] for this IE, the UE shall:

- if a default value of the IE is defined:
  - treat the rest of the message using the default value of the IE;
- if no default value of the IE is defined:
  - set the variable `PROTOCOL_ERROR_REJECT` to `TRUE`;
  - set the IE "Protocol error cause" in the variable `PROTOCOL_ERROR_INFORMATION` to "Information element value not comprehended";
  - perform procedure specific error handling according to clause 8.

If the UE receives a system information block on the BCCH for which the specified conditions for presence of a conditional IE are met, that IE is present, and that IE has a value, including choice, reserved for future extension (spare) or when the encoded IE does not result in any valid abstract syntax value for this IE, the UE shall:

- if a default value of the IE is defined:
  - treat the rest of the system information block using the default value of the IE;
- if no default value of the IE is defined:

- ignore the system information block.

If the UE receives an RRC message on the BCCH or PCCH for which the specified conditions for presence of a conditional IE are met, that IE is present, and that IE has a value, including choice, reserved for future extension (spare) or when the encoded IE does not result in any valid abstract syntax value for this IE, the UE shall:

- if a default value of the IE is defined:
  - treat the rest of the message using the default value of the IE;
- if no default value of the IE is defined:
  - ignore the message.

---

## 10 Message and information element functional definition and content

### 10.1 General

The function of each Radio Resource Control message together with message contents in the form of a list of information elements is defined in subclause 10.2.

Functional definitions of the information elements are then described in subclause 10.3.

Information elements are marked as either MP - Mandatory present, MD - Mandatory with default value, OP - Optional, CV - Conditional on value or CH - Conditional on history (see Table 10.1 with information extracted from [14]).

Table 10.1: Meaning of abbreviations used in RRC messages and information elements

Abbreviation	Meaning
MP	<p>Mandatory present</p> <p>A value for that information is always needed, and no information is provided about a particular default value. If ever the transfer syntax allows absence (e.g., due to extension), then absence leads to an error diagnosis.</p>
MD	<p>Mandatory with default value</p> <p>A value for that information is always needed, and a particular default value is mentioned (in the 'Semantical information' column). This opens the possibility for the transfer syntax to use absence or a special pattern to encode the default value.</p>
CV	<p>Conditional on value</p> <p>The need for a value for that information depends on the value of some other IE or IEs, and/or on the message flow (e.g., channel, SAP). The need is specified by means of a condition, which result may be that the information is mandatory present, mandatory with default value, not needed or optional.</p> <p>If one of the results of the condition is that the information is mandatory present, the transfer syntax must allow for the presence of the information. If in this case the information is absent an error is diagnosed.</p> <p>If one of the results of the condition is that the information is mandatory with default value, and a particular default value is mentioned (in the 'Semantical information' column), the transfer syntax may use absence or a special pattern to encode the default value.</p> <p>If one of the results of the condition is that the information is not needed, the transfer syntax must allow encoding the absence. If in this case the information is present, it will be ignored. In specific cases however, an error may be diagnosed instead. If one of the results of the condition is that the information is optional, the transfer syntax must allow for the presence of the information. In this case, neither absence nor presence of the information leads to an error diagnosis.</p> <p>A value for that information is needed (presence needed) or unacceptable (absence needed) when some conditions are met that can be evaluated on the sole basis of the content of the message.</p> <p>If conditions for presence needed are specified, the transfer syntax must allow for the presence of the information. If the transfer syntax allows absence, absence when the conditions for presence are met leads to an error diagnosis.</p> <p>If conditions for absence needed are specified, the transfer syntax must allow to encode the absence. If the information is present and the conditions for absence are met, an error is diagnosed.</p> <p>When neither conditions for presence or absence are met, the information is treated as optional, as described for 'OP'.</p>
CH	<p>Conditional on history</p> <p>The need for a value for that information depends on information obtained in the past (e.g., from messages received in the past from the other peerarty). The need is specified by means of a condition, which result may be that the information is mandatory present, mandatory with default value, not needed or optional.</p> <p>The handling of the conditions is the same as described for CV.</p> <p>A value for that information is needed (presence needed) or unacceptable (absence needed) when some conditions are met that must be evaluated on the basis of information obtained in the past (e.g., from messages received in the</p>



Abbreviation	Meaning
	<p>past from the other party).</p> <p>If conditions for presence needed are specified, the transfer syntax must allow for the presence of the information. If the transfer syntax allows absence, absence when the conditions for presence are met leads to an error diagnosis.</p> <p>If conditions for absence needed are specified, the transfer syntax must allow to encode the absence. If the information is present and the conditions for absence are met, an error is diagnosed.</p> <p>When neither conditions for presence or absence are met, the information is treated as optional, as described for 'OP'.</p>
OP	<p>Optional</p> <p>The presence or absence is significant and modifies the behaviour of the receiver. However whether the information is present or not does not lead to an error diagnosis.</p>

### 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 10.2.47 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.

### 10.1.1.1 Non-critical extensions

#### 10.1.1.1.1 Extension of an information element with additional values or choices

In future versions of this protocol, non-critical values may be added to choices, enumerated and size constrained types.

For choices, enumerated and size constrained types it is possible to indicate how many non-critical spare values need to be reserved for future extension. The number of spare values is specified within the ASN.1 type definitions; In this case, the tabular format only should indicate that at least one the number of spare values that is needed. Within the ASN.1 spare values should only be used to increase the encoded size of an IE. This means that the ASN.1 should only include spares if the number of spare values that is needed exceeds the number of undefined values-code points that exist after encoding of the information element within the transfer syntax of the information element.

This kind of extension is allowed only for items with need set to OP or MD, and the receiver shall interpret the reception of a spare as absence of the IE and as reception of the default value respectively.

For downlink messages, spare values may be defined for non-critical information elements for which the need is specified to be MD or OP (or CV case leading to MD or OP). In this case, a receiver not comprehending the received a spare value shall consider the information element to have the default value or consider it to be absent respectively.

For uplink messages spares values may be defined for all information elements, including those for which the need is specified to be MP (or CV case leading to MP).

In all cases at most one spare should be defined for choices. In this case, information elements applicable to the spare choices reserved for future releases of the protocol shall be added to the end of the message.

#### 10.1.1.1.2 Extension of a message with additional information elements

In future versions of this protocol, non-critical information elements may be added to RRC messages. These additional information elements shall be appended at the end of the message; the transfer syntax specified in this revision of the standard facilitates this. A receiver conformant to this revision of the standard shall accept such extension, and proceed as if it was not included.

### 10.1.1.2 Critical extensions

#### 10.1.1.2.1 Extension of an information element with additional values or choices

In versions of this protocol, choices, enumerated and size constrained types may be extended with critical values. For extension with critical values the general critical extension mechanism is used, i.e. for this no spare values are reserved since backward compatibility is not required.

#### 10.1.1.2.2 Extension of a message with additional information elements

In future versions of this protocol, RRC messages may be extended with new information elements. Since messages including critical extensions are rejected by receivers not comprehending them, these messages may be modified completely, e.g. IEs may be inserted at any place and IEs may be removed or redefined.

## 10.2 Radio Resource Control messages

### 10.2.1 ACTIVE SET UPDATE

NOTE: Only for FDD.

This message is used by UTRAN to add, replace or delete radio links in the active set of the UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now".
New U-RNTI	OP		U-RNTI 10.3.3.47	
<b>CN information elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>RB information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>Phy CH information elements</b>				
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing "maximum UL TX power."
<b>Downlink radio resources</b>				
Radio link addition information	OP	1 to <maxRL-1>		Radio link addition information required for each RL to add
>Radio link addition information	MP		Radio link addition information 10.3.6.68	
Radio link removal information	OP	1 to <maxRL>		Radio link removal information required for each RL to remove
>Radio link removal information	MP		Radio link removal information 10.3.6.69	
TX Diversity Mode	MD		TX Diversity Mode 10.3.6.86	Default value is the existing TX diversity mode.
SSDT information	OP		SSDT information 10.3.6.77	

## 10.2.2 ACTIVE SET UPDATE COMPLETE

NOTE: For FDD only.

This message is sent by UE when active set update has been completed.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
<b>RB Information elements</b>				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	
Uplink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

## 10.2.3 ACTIVE SET UPDATE FAILURE

NOTE: Only for FDD.

This message is sent by UE if the update of the active set has failed, e.g. because the radio link is not a part of the active set.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.2.4 ASSISTANCE DATA DELIVERY

This message is sent by UTRAN to convey UE positioning assistance data to the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Measurement Information elements</b>				
UE positioning OTDOA assistance data	OP		UE positioning OTDOA assistance data 10.3.7.103	
UE positioning GPS assistance data	OP		UE positioning GPS assistance data 10.3.7.90	

## 10.2.5 CELL CHANGE ORDER FROM UTRAN

This message is used to order a cell change from UTRA to another radio access technology, e.g., GSM.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
<b>RB Information elements</b>				
RAB information list	OP	1 to <maxRABs etup>		For each RAB to be handed over
>RAB info	MP		RAB info 10.3.4.8	
<b>Other information elements</b>				
Target cell description	MP			
>CHOICE <i>Radio Access Technology</i>	MP			At least one spare choice, Criticality: Reject, is needed.
>>GSM				
>>>BSIC	MP		BSIC 10.3.8.2	
>>>Band Indicator	MP		Enumerated (DCS 1800 band used, PCS 1900 band used)	Indicates how to interpret the BCCH ARFCN
>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
>>>NC mode	OP		Bitstring(3)	[43]
>>IS-2000				

## 10.2.6 CELL CHANGE ORDER FROM UTRAN FAILURE

This message is sent on the RRC connection used before the Cell change order from UTRAN was executed. The message indicates that the UE has failed to seize the new channel in the other radio access technology.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Other information elements</b>				
Inter-RAT change failure	MP		Inter-RAT change failure 10.3.8.5	

## 10.2.7 CELL UPDATE

This message is used by the UE to initiate a cell update procedure.

RLC-SAP: TM

Logical channel: CCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
U-RNTI	MP		U-RNTI 10.3.3.47	
RRC transaction identifier	<i>CV-Failure</i>		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	START value to be used in this CN domain.
AM_RLC error indication(RB2 or RB3)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error [16] occurred on RB2 or RB3 in the UE
AM_RLC error indication(RB>3)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error [16] occurred on RB>3 in the UE
Cell update cause	MP		Cell update cause 10.3.3.3	
Failure cause	OP		Failure cause and error information 10.3.3.14	
RB timer indicator	MP		RB timer indicator 10.3.3.28	
<b>Measurement information elements</b>				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

Condition	Explanation
<i>Failure</i>	This IE is mandatory <u>present</u> if the IE "Failure cause" is present <u>and not needed</u> . <del>Otherwise it is absent.</del>

## 10.2.8 CELL UPDATE CONFIRM

This message confirms the cell update procedure and can be used to reallocate new RNTI information for the UE valid in the new cell.

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
U-RNTI	CV-CCCH		U-RNTI 10.3.3.47	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing DRX cycle length coefficient
RLC re-establish indicator (RB2 and RB3)	MP		RLC re-establish indicator 10.3.3.35	
RLC re-establish indicator (RB4 and upwards)	MP		RLC re-establish indicator 10.3.3.35	
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN Information Elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
RB information to release list	OP	1 to <maxRB>		
>RB information to release	MP		RB information to release 10.3.4.19	
RB information to reconfigure list	OP	1 to <maxRB>		
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18	
RB information to be affected list	OP	1 to <maxRB>		
>RB information to be affected	MP		RB information	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			to be affected 10.3.4.17	
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
<i>CHOICE channel requirement</i>				
>Uplink DPCH info	OP		Uplink DPCH info 10.3.6.88.	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
<i>CHOICE mode</i>	MP			
>FDD				
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

Condition	Explanation
CCCH	This IE is mandatory <u>present</u> when CCCH is used and ciphering is not required. <u>And not needed</u> <u>Otherwise it is absent.</u>

### 10.2.9 COUNTER CHECK

This message is used by the UTRAN to indicate the current COUNT-C MSB values associated to each radio bearer utilising UM or AM RLC mode and to request the UE to compare these to its COUNT-C MSB values and to report the comparison results to UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Presence	Multi	IE type and reference	Semantics description
Message Type	MP			
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	MP		Integrity check info 10.3.3.16	
<b>RB information elements</b>				
RB COUNT-C MSB information	MP	1 to < maxRBallR ABs >		For each RB (excluding signalling radio bearers) using UM or AM RLC.
>RB COUNT-C MSB information	MP		RB COUNT-C MSB information 10.3.4.14	

## 10.2.10 COUNTER CHECK RESPONSE

This message is used by the UE to respond to a COUNTER CHECK message.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Presence	Multi	IE type and reference	Semantics description
Message Type	MP			
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	MP		Integrity check info 10.3.3.16	
<b>RB information elements</b>				
RB COUNT-C information	OP	1 to < maxRBallR ABs >		
>RB COUNT-C information	MP		RB COUNT-C information 10.3.4.15	

## 10.2.11 DOWNLINK DIRECT TRANSFER

This message is sent by UTRAN to transfer higher layer messages.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN -> UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>CN information elements</b>				
CN Domain Identity	MP		Core Network Domain Identity 10.3.1.1	
NAS message	MP		NAS message 10.3.1.8	

## 10.2.12 HANDOVER TO UTRAN COMMAND

This message is sent to the UE via other system to make a handover to UTRAN.

RLC-SAP: N/A (Sent through a different RAT)

Logical channel: N/A (Sent through a different RAT)

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
New U-RNTI	MP		U-RNTI Short 10.3.3.48	
Ciphering algorithm	OP		Ciphering algorithm 10.3.3.4	
<b>CHOICE <i>specification mode</i></b>	MP			
>Complete specification				
<b>RB information elements</b>				
>>Signalling RB information to setup list	MP	1 to <maxSRBs etup>		For each signalling radio bearer established
>>>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
>>RAB information to setup list	OP	1 to <maxRABs etup>		For each RAB established
>>>RAB information for setup	MP		RAB information for setup 10.3.4.10	
<b>Uplink transport channels</b>				
>>UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.24	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH >		
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
<b>Downlink transport channels</b>				
>>DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.6	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH >		
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>Uplink radio resources</b>				
>>Uplink DPCH info	MP		Uplink DPCH info 10.3.6.88	
>>CHOICE <i>mode</i>	MP			
>>>FDD				
>>>>CPCH SET Info	OP		CPCH SET Info 10.3.6.13	



Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Downlink radio resources</b>				
>>>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>>>TDD				(no data)
>>Downlink information common for all radio links	MP		Downlink information common for all radio links 10.3.6.24	
>>Downlink information per radio link	MP	1 to <maxRL>		
>>>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	
>Preconfiguration				
>>CHOICE <i>Preconfiguration mode</i>	MP			
>>>Predefined configuration	MP		Predefined configuration identity 10.3.4.5	
>>>Default configuration				
>>>>Default configuration mode	MP		Enumerated (FDD, TDD)	Indicates whether the FDD or TDD version of the default configuration shall be used
>>>>Default configuration identity	MP		Default configuration identity 10.3.4.0	
>>RAB info	OP		RAB info Post 10.3.4.9	One RAB is established
>>Uplink DPCH info	MP		Uplink DPCH info Post 10.3.6.89	
<b>Downlink radio resources</b>				
>>Downlink information common for all radio links	MP		Downlink information common for all radio links Post 10.3.6.25	
>>Downlink information per radio link	MP	1 to <maxRL>		Send downlink information for each radio link to be set-up. In TDD MaxRL is 1.
>>>Downlink information for each radio link	MP		Downlink information for each radio link Post 10.3.6.28	
>>CHOICE <i>mode</i>	MP			
>>>FDD				(no data)
>>>TDD				
>>>>Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.59	
Frequency info	MP		Frequency info	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			10.3.6.36	
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.39	

### 10.2.13 HANDOVER TO UTRAN COMPLETE

This message is sent by the UE when a handover to UTRAN has been completed.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information elements</b>				
START list	CH	1 to <maxCNdo mains>		START [40] values for all CN domains. The IE is mandatory if it has not been transferred prior to the handover.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	
<b>RB Information elements</b>				
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.

### 10.2.14 INITIAL DIRECT TRANSFER

This message is used to initiate a signalling connection based on indication from the upper layers, and to transfer a NAS message.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE -> UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>CN information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	
Intra Domain NAS Node Selector	MP		Intra Domain NAS Node Selector 10.3.1.6	
NAS message	MP		NAS message 10.3.1.8	
<b>Measurement information elements</b>				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

## 10.2.15 HANDOVER FROM UTRAN COMMAND

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
<b>RB information elements</b>				
RAB information list	OP	1 to <maxRABsetup>		For each RAB to be handed over. In this version, the maximum size of the list of 1 shall be applied for all system types.
>RAB info	MP		RAB info 10.3.4.8	
<b>Other information elements</b>				
CHOICE <i>System type</i>	MP			This IE indicates which specification to apply, to decode the transported messages
>GSM				
>>Frequency band	MP		Enumerated (GSM/DCS 1800 band used), GSM/PCS 1900 band used)	
>>GSM message				
>>>Single GSM message	MP		Bitstring (no explicit size constraint)	Formatted and coded according to GSM specifications The first bit of the bitstring contains the first bit of the GSM message.
>>>GSM message List	MP	1.to.<maxInterSysMessages>	Bitstring (1..512)	Formatted and coded according to GSM specifications. The first bit of the bitstring contains the first bit of the GSM message.
>cdma2000				
>>cdma2000MessageList	MP	1.to.<maxInterSysMessages>		
>>>MSG_TYPE(s)	MP		Bitstring (8)	Formatted and coded according to cdma2000 specifications. The MSG_TYPE bits are numbered b0 to b7, where b0 is the least significant bit.
>>>cdma2000Messagepayload(s)	MP		Bitstring (1..512)	Formatted and coded according to cdma2000 specifications. The first bit of the bitstring contains the first bit of the cdma2000 message.

## 10.2.16 HANDOVER FROM UTRAN FAILURE

This message is sent on the RRC connection used before the Inter-RAT Handover was executed. The message indicates that the UE has failed to seize the new channel in the other system.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Other information elements</b>				
Inter-RAT handover failure	OP		Inter-RAT handover failure 10.3.8.6	
CHOICE <i>System type</i>	MP			This IE indicates which specification to apply to decode the transported messages
>GSM				
>GSM message List	MP	1.to.<maxlnterSysMessages>	Bitstring (1..512)	Formatted and coded according to GSM specifications. The first bit of the bitstring contains the first bit of the GSM message.
>cdma2000				
>>cdma2000MessageList	MP	1.to.<maxlnterSysMessages>		
>>>MSG_TYPE(s)	MP		Bitstring (8)	Formatted and coded according to cdma2000 specifications. The MSG_TYPE bits are numbered b0 to b7, where b0 is the least significant bit.
>>>cdma2000Messagepayload(s)	MP		Bitstring (1..512)	Formatted and coded according to cdma2000 specifications. The first bit of the bitstring contains the first bit of the cdma2000 message.

## 10.2.17 MEASUREMENT CONTROL

This message is sent by UTRAN to setup, modify or release a measurement in the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Measurement Information elements</b>				
Measurement Identity	MP		Measurement Identity 10.3.7.48	
Measurement Command	MP		Measurement Command 10.3.7.46	
Measurement Reporting Mode	OP		Measurement Reporting Mode 10.3.7.49	
Additional measurements list	OP		Additional measurements list 10.3.7.1	
CHOICE <i>Measurement type</i>	CV-command			
>Intra-frequency measurement			Intra-frequency measurement 10.3.7.36	
>Inter-frequency measurement			Inter-frequency measurement 10.3.7.16	
>Inter-RAT measurement			Inter-RAT measurement 10.3.7.27	
>UE positioning measurement			UE positioning measurement 10.3.7.100	
>Traffic Volume measurement			Traffic Volume measurement 10.3.7.68	
>Quality measurement			Quality measurement 10.3.7.56	
>UE internal measurement			UE internal measurement 10.3.7.77	
<b>Physical channel information elements</b>				
DPCH compressed mode status info	OP		DPCH compressed mode status info 10.3.6.34	

Condition	Explanation
<i>Command</i>	The IE is mandatory <u>present</u> if the "Measurement command" IE is set to "Setup", optional if the "Measurement command" IE is set to "modify", otherwise the IE is not needed.

### 10.2.18 MEASUREMENT CONTROL FAILURE

This message is sent by UE, if it cannot initiate a measurement as instructed by UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.2.19 MEASUREMENT REPORT

This message is used by UE to transfer measurement results to the UTRAN.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Measurement Information Elements</b>				
Measurement identity	MP		Measurement identity 10.3.7.48	
Measured Results	OP		Measured Results 10.3.7.44	
Measured Results on RACH	OP		Measured Results on RACH 10.3.7.45	
Additional Measured results	OP	1 to <maxAdditionalMeas>		
>Measured Results	MP		Measured Results 10.3.7.44	
Event results	OP		Event results 10.3.7.7	

## 10.2.20 PAGING TYPE 1

This message is used to send information on the paging channel. One or several UEs, in idle or connected mode, can be paged in one message, which also can contain other information.

RLC-SAP: TM

Logical channel: PCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information elements</b>				
Paging record list	OP	1 to <maxPage 1>		
>Paging record	MP		Paging record 10.3.3.23	
<b>Other information elements</b>				
BCCH modification info	OP		BCCH modification info 10.3.8.1	

If the encoded message does not fill a transport block, the RRC layer shall add padding according to subclause 12.1.

## 10.2.21 PAGING TYPE 2

This message is used to page an UE in connected mode, when using the DCCH for CN originated paging.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Paging cause	MP		Paging cause 10.3.3.22	
<b>CN Information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	
Paging Record Type Identifier	MP		Paging Record Type Identifier 10.3.1.10	



## 10.2.22 PHYSICAL CHANNEL RECONFIGURATION

This message is used by UTRAN to assign, replace or release a set of physical channels used by a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing value of the maximum allowed UL TX power
<b>CHOICE channel requirement</b>				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
>CPCH set ID			CPCH set ID	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			10.3.5.3	
<b>Downlink radio resources</b>				
CHOICE <i>mode</i>	MP			
>FDD				
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

### 10.2.23 PHYSICAL CHANNEL RECONFIGURATION COMPLETE

This message is sent from the UE when a physical channel reconfiguration has been done.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE <i>mode</i>	MP			
>FDD				(no data)
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95	
<b>RB Information elements</b>				
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	
Uplink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

## 10.2.24 PHYSICAL CHANNEL RECONFIGURATION FAILURE

This message is sent by UE if the configuration given by UTRAN is unacceptable or if the UE failed to assign, replace or release a set of physical channel(s).

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message type	MP		Message type	
<b>UE information elements</b>				
RRC transaction identifier	OP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.2.25 PHYSICAL SHARED CHANNEL ALLOCATION

NOTE: Only for TDD.

This message is used by UTRAN to assign physical resources to USCH/DSCH transport channels in TDD, for temporary usage by the UE.

RLC-SAP: UM on SHCCH, UM on DCCH

Logical channel: SHCCH or DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message type	
C-RNTI	OP		C-RNTI 10.3.3.8	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Uplink timing advance Control	MD		Uplink Timing Advance Control 10.3.6.96	Default value is the existing value for uplink timing advance
PUSCH capacity allocation info	OP		PUSCH Capacity Allocation info 10.3.6.64	
PDSCH capacity allocation info	OP		PDSCH Capacity Allocation info 10.3.6.42	
Confirm request	MD		Enumerated( No Confirm, Confirm PDSCH, Confirm PUSCH)	Default value is No Confirm
Traffic volume report request	OP		Integer (0 .. 255)	Indicates the number of frames between start of the allocation period and sending measurement report. The value should be less than the value for Allocation Duration.
ISCP Timeslot list	OP	1 to maxTS		
>Timeslot number	MP		Timeslot number 10.3.6.84	Timeslot numbers, for which the UE shall report the timeslot ISCP in PUSCH CAPACITY REQUEST message.

## 10.2.26 PUSCH CAPACITY REQUEST

NOTE: Only for TDD.

This message is used by the UE for request of PUSCH resources to the UTRAN.

RLC-SAP: TM

Logical channel: SHCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
C-RNTI	OP		C-RNTI 10.3.3.8	
RRC transaction identifier	CV-ProtErr		RRC transaction identifier 10.3.3.36	
Traffic Volume	OP		Traffic Volume, measured results list 10.3.7.67	
Timeslot list	OP	1 to maxTS		
>Timeslot number	MP		Timeslot number 10.3.6.84	
>Timeslot ISCP	MP		Timeslot ISCP info 10.3.7.65	
Primary CCPCH RSCP	OP		Primary CCPCH RSCP info 10.3.7.54	
CHOICE Allocation confirmation	OP			
>PDSCH Confirmation			Integer(1..Hi PDSCHIdentities)	
>PUSCH Confirmation			Integer(1..Hi PUSCHIdentities)	
Protocol error indicator	MD		Protocol error indicator 10.3.3.27	Default value is FALSE
Protocol error information	CV-ProtErr		Protocol error information 10.3.8.12	

Condition	Explanation
<i>ProtErr</i>	This IE is mandatory <u>present</u> if the IE "Protocol error indicator" has the value "TRUE". Otherwise it is not needed.

### 10.2.27 RADIO BEARER RECONFIGURATION

This message is sent from UTRAN to reconfigure parameters related to a change of QoS. This procedure can also change the multiplexing of MAC, reconfigure transport channels and physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN information elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
RAB information to reconfigure list	OP	1 to <maxRABsetup >		
>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11	
RB information to reconfigure list	MP	1to <maxRB>		Although this IE is not always required, need is MP to align with ASN.1
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18	
RB information to be affected list	OP	1 to <maxRB>		
>RB information to be affected	MP		RB information to be affected 10.3.4.17	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel	OP		UL Transport	



Information Element/Group name	Need	Multi	Type and reference	Semantics description
information common for all transport channels			channel information common for all transport channels 10.3.5.24	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
CHOICE <i>mode</i>	MP			
>FDD				
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	MP	1 to <maxRL>		Although this IE is not always required, need is MP to align with ASN.1
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

## 10.2.28 RADIO BEARER RECONFIGURATION COMPLETE

This message is sent from the UE when a RB and signalling link reconfiguration has been done.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE <i>mode</i>	MP			
>FDD				(no data)
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95	
<b>RB Information elements</b>				
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	
Uplink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

## 10.2.29 RADIO BEARER RECONFIGURATION FAILURE

This message is sent by UE if the configuration given by UTRAN is unacceptable or if the UE failed to establish the physical channel(s).

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	
<b>RB information elements</b>				
Radio bearers for which reconfiguration would have succeeded List	OP	1 to <maxRB>		
>Radio bearer for which reconfiguration would have succeeded	MP		RB identity, 10.3.4.16	

### 10.2.30 RADIO BEARER RELEASE

This message is used by UTRAN to release a radio bearer. It can also include modifications to the configurations of transport channels and/or physical channels. It can simultaneously indicate release of a signalling connection when UE is connected to more than one CN domain.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
Signalling Connection release indication	OP		CN domain identity 10.3.1.1	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB Information Elements</b>				
RAB information to reconfigure list	OP	1 to <maxRABse tup >		
>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11	
RB information to release list	MP	1 to <maxRB>		
>RB information to release	MP		RB information to release 10.3.4.19	
RB information to be affected list	OP	1 to <maxRB>		
>RB information to be affected	MP		RB information to be affected 10.3.4.17	
Downlink counter synchronisation info	OP			

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
<i>CHOICE channel requirement</i>				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
<i>CHOICE mode</i>				
>FDD	MP			
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

### 10.2.31 RADIO BEARER RELEASE COMPLETE

This message is sent from the UE when radio bearer release has been completed.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE <i>mode</i>	MP			
>FDD				(no data)
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95	This information element shall be present in case of handover procedure if timing advance is enabled. Calculated timing advance value for the new cell after handover in a synchronous TDD network
<b>RB Information elements</b>				
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	
Uplink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

## 10.2.32 RADIO BEARER RELEASE FAILURE

This message is sent by UE if the configuration given by UTRAN is unacceptable or if radio bearer cannot be released.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	
<b>RB information elements</b>				
Radio bearers for which reconfiguration would have succeeded	OP	1 to <maxRB>		
>Radio bearer for which reconfiguration would have been succeeded	MP		RB identity, 10.3.4.16	

### 10.2.33 RADIO BEARER SETUP

This message is sent by UTRAN to the UE to establish new radio bearer(s). It can also include modifications to the configurations of transport channels and/or physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB Information Elements</b>				
Signalling RB information to setup list	OP	1 to <maxSRBs etup>		For each signalling radio bearer established
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
RAB information to setup list	OP	1 to <maxRABs etup>		For each RAB established
>RAB information for setup	MP		RAB information for setup 10.3.4.10	
RB information to be affected list	OP	1 to <maxRB>		
>RB information to be affected	MP		RB information to be affected 10.3.4.17	
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall		This IE is needed for each RB having PDCP in the case of

Information Element/Group name	Need	Multi	Type and reference	Semantics description
		RABs>		lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency	Default value is the existing

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			info 10.3.6.36	value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
<i>CHOICE channel requirement</i>				
>Uplink DPCH info	OP		Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
<i>CHOICE mode</i>				
>FDD	MP			
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

### 10.2.34 RADIO BEARER SETUP COMPLETE

This message is sent by UE to confirm the establishment of the radio bearer.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE <i>mode</i>	OP			
>FDD				(no data)
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95	This information element shall be present in case of handover procedure if timing advance is enabled. Calculated timing advance value for the new cell after handover in a synchronous TDD network
START	OP		START 10.3.3.38	This information element is not needed for transparent mode RBs
<b>RB Information elements</b>				
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	
Uplink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

### 10.2.35 RADIO BEARER SETUP FAILURE

This message is sent by UE, if it does not support the configuration given by UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	
<b>RB information elements</b>				
Radio bearers for which reconfiguration would have succeeded	OP	1 to <maxRB>		
>Radio bearer for which reconfiguration would have succeeded	MP		RB identity, 10.3.4.16	

### 10.2.36 RRC CONNECTION REJECT

The network transmits this message when the requested RRC connection cannot be accepted.

RLC-SAP: UM

Logical channel: CCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Initial UE identity	MP		Initial UE identity 10.3.3.15	
Rejection cause	MP		Rejection cause 10.3.3.31	
Wait time	MP		Wait time 10.3.3.50	
Redirection info	OP		Redirection info 10.3.3.29	

### 10.2.37 RRC CONNECTION RELEASE

This message is sent by UTRAN to release the RRC connection. The message also releases the signalling connection and all radio bearers between the UE and UTRAN.

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
U-RNTI	CV-CCCH		U-RNTI 10.3.3.47	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CV-DCCH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
N308	CH-Cell_DCH		Integer(1..8)	
Release cause	MP		Release cause 10.3.3.32	
<b>Other information elements</b>				
Rplmn information	OP		Rplmn information 10.3.8.15	

Condition	Explanation
CCCH	This IE is <del>only sent</del> <u>mandatory present</u> when CCCH is used <u>and not needed otherwise</u> .
DCCH	This IE is <del>only sent</del> <u>mandatory present</u> when DCCH is used <u>and not needed otherwise</u> .
Cell_DCH	This IE is <u>mandatory present</u> when UE is in CELL_DCH state <u>and not needed otherwise</u> .

## 10.2.38 RRC CONNECTION RELEASE COMPLETE

This message is sent by UE to confirm that the RRC connection has been released.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Error indication	OP		Failure cause and error information 10.3.3.14	

## 10.2.39 RRC CONNECTION REQUEST

RRC Connection Request is the first message transmitted by the UE when setting up an RRC Connection to the network.

RLC-SAP: TM

Logical channel: CCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Initial UE identity	MP		Initial UE identity 10.3.3.15	
Establishment cause	MP		Establishment cause 10.3.3.11	
Protocol error indicator	MD		Protocol error indicator 10.3.3.27	Default value is FALSE
<b>Measurement information elements</b>				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.

## 10.2.40 RRC CONNECTION SETUP

This message is used by the network to accept the establishment of an RRC connection for an UE, including assignment of signalling link information, transport channel information and optionally physical channel information.

RLC-SAP: UM

Logical channel: CCCH

Direction: UTRAN → UE



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
Initial UE identity	MP		Initial UE identity 10.3.3.15	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	MP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MP		UTRAN DRX cycle length coefficient 10.3.3.49	
Capability update requirement	MD		Capability update requirement 10.3.3.2	Default value is defined in subclause 10.3.3.2
<b>RB Information Elements</b>				
Signalling RB information to setup list	MP	3 to 4		Information for signalling radio bearers, in the order RB1 up to RB4.
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Added or Reconfigured TrCH information list	MP	1 to <maxTrCH >		Although this IE is not required when the IE "RRC state indicator" is set to "CELL_FACH", need is MP to align with ASN.1
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Added or Reconfigured TrCH information list	MP	1 to <maxTrCH >		Although this IE is not required when the IE "RRC state

Information Element/Group name	Need	Multi	Type and reference	Semantics description
		>		indicator" is set to "CELL_FACH", need is MP to align with ASN.1
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
<i>CHOICE channel requirement</i>				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <MaxRL>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

## 10.2.41 RRC CONNECTION SETUP COMPLETE

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

RLC-SAP: AM

Logical channel: DCCCH

Direction: UE → UTRAN

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

## 10.2.42 RRC STATUS

This message is sent to indicate a protocol error.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Identification of received message	CV- <i>Message identified</i>			
>Received message type	MP		Message Type	
>RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
<b>Other information elements</b>				
Protocol error information	MP		Protocol error information 10.3.8.12	

Condition	Explanation
<i>Message identified</i>	This IE is mandatory <u>present</u> if the IE "Protocol error cause" in the IE "Protocol error information" has any other value than "ASN.1 violation or encoding error" or "Message type non-existent or not implemented" <u>and not needed otherwise.</u>

### 10.2.43 SECURITY MODE COMMAND

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN to UE

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

## 10.2.44 SECURITY MODE COMPLETE

This message is sent by UE to confirm the reconfiguration of ciphering and/or integrity protection.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	MP		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
<b>RB Information elements</b>				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	

## 10.2.45 SECURITY MODE FAILURE

This message is sent to indicate a failure to act on a received SECURITY MODE CONTROL message.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.2.46 SIGNALLING CONNECTION RELEASE

This message is used to notify the UE that its ongoing signalling connection to a CN domain has been released.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
<b>CN information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	

### 10.2.47 SIGNALLING CONNECTION RELEASE REQUEST

This message is used by the UE to request 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	
<b>UE Information Elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>CN information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	

## 10.2.48 SYSTEM INFORMATION

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message type	OPCV- <u>channel1</u>		Message type	The message type is mandatory on the FACH, and absent on the BCH
SFNprime	CV- <u>channel2</u>		Integer(0..4094 by step of 2)	SFN=SFNprime (for first 10ms frame of 20ms TTI), SFN=SFNprime+1 (for last 10ms frame of 20ms TTI)
CHOICE Segment combination	MP			
>Combination 1				(no data)
>Combination 2				
>>First Segment	MP		First Segment, 10.2.48.1	
>Combination 3				
>>Subsequent Segment	MP		Subsequent Segment, 10.2.48.3	
>Combination 4				
>>Last segment	MP		Last segment (short), 10.2.48.5	
>Combination 5				
>>Last segment	MP		Last Segment (short) 10.2.48.5	
>>First Segment	MP		First Segment (short), 10.2.48.2	
>Combination 6				
>>Last Segment	MP		Last Segment (short), 10.2.48.5	
>>Complete list	MP	1 to maxSIBper Msg		Note 1
>>>Complete	MP		Complete SIB (short), 10.2.48.7	
>Combination 7				
>>Last Segment	MP		Last Segment (short), 10.2.48.5	
>>Complete list	MP	1..< maxSIBper Msg>		Note 1
>>>Complete	MP		Complete SIB (short), 10.2.48.7	
>>First Segment	MP		First Segment (short), 10.2.48.2	
>Combination 8				
>>Complete list	MP	1 to maxSIBper Msg		Note 1



>>>Complete	MP		Complete SIB (short),10.2.48.7	
>Combination 9				
>>Complete list	MP	1..MaxSIB perMsg		Note 1
>>>Complete	MP		Complete SIB (short),10.2.48.7	
>>First Segment	MP		First Segment (short), 10.2.48.2	
>Combination 10				
>>>Complete SIB of size 215 to 226	MP		Complete SIB,10.2.48.6	
>Combination 11				
>>Last segment of size 215 to 222	MP		Last segment,10.2.48.4	

Condition	Explanation
<i>channel1</i>	The IE is mandatory present if the message is sent on the FACH and not needed otherwise.
<i>channel2</i>	This IE is mandatory present if the channel is BCH, otherwise it is absentnot needed.

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1. Padding is needed e.g. if the remaining space is insufficient to start a new First Segment (which requires several bits for SIB type, SEG\_COUNT and SIB data).

NOTE 1: If Combination 6 - 9 contains a Master information block Master information shall be located as the first IE in the list.

### 10.2.48.1 First Segment

This segment type is used to transfer the first segment of a segmented system information block. The IE is used when the first segment fills the entire transport block (Combination 2).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
SEG_COUNT	MP		SEG COUNT, 10.3.8.17	
SIB data fixed	MP		SIB data fixed, 10.3.8.19	

### 10.2.48.2 First Segment (short)

This segment type is used to transfer the first segment of a segmented system information block. The IE is used when the first segment is concatenated after other segments in a transport block (Combination 5, 7 and 9).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
SEG_COUNT	MP		SEG COUNT, 10.3.8.17	
SIB data variable	MP		SIB data variable, 10.3.8.20	

### 10.2.48.3 Subsequent Segment

This segment type is used to transfer a subsequent segment of a segmented system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
Segment index	MP		Segment Index, 10.3.8.18	
SIB data fixed	MP		SIB data fixed, 10.3.8.19	

### 10.2.48.4 Last Segment

This segment type is used to transfer the last segment of a segmented system information block. The IE is used when the last segment has a length, excluding length denominator, from 215 through 222 (Combination 11).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
Segment index	MP		Segment Index, 10.3.8.18	
SIB data fixed	MP		SIB data fixed, 10.3.8.19	In case the SIB data is less than 222 bits, padding shall be used. The same padding bits shall be used as defined in clause 12.1

### 10.2.48.5 Last Segment (short)

This segment type is used to transfer the last segment of a segmented system information block. The IE is used when the last segment has a length, excluding length denominator, of upto 214 bits (Combination 4, 5, 6 and 7).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
Segment index	MP		Segment Index, 10.3.8.18	
SIB data variable	MP		SIB data variable, 10.3.8.20	

### 10.2.48.6 Complete SIB

This segment type is used to transfer a non-segmented system information block. The IE is used when the complete SIB has a length, excluding length denominator, from 215 through 226 (Combination 10).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
SIB data fixed	MP		Bit string (226)	In case the SIB data is less than 226 bits, padding shall be used. The same padding bits shall be used as defined in clause 12.1

### 10.2.48.7 Complete SIB (short)

This segment type is used to transfer a non-segmented system information block. The IE is used when the complete SIB has a length, excluding length denominator, of upto 214 bits (Combination 6, 7, 8 and 9).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
SIB data variable	MP		SIB data variable, 10.3.8.20	

### 10.2.48.8 System Information Blocks

The IE "SIB data" within the IEs, "First Segment", "Subsequent or last Segment" and "Complete SIB" contains either complete system information block or a segment of a system information block. The actual system information blocks are defined in the following clauses.

10.2.48.8.1 Master Information Block

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
MIB Value tag	MP		MIB Value tag 10.3.8.9	
<b>CN information elements</b>				
Supported PLMN types	MP		PLMN Type 10.3.1.12	
PLMN Identity	CV-GSM		PLMN Identity 10.3.1.11	
<b>ANSI-41 information elements</b>				
ANSI-41 Core Network Information	CV-ANSI-41		ANSI-41 Core Network Information 10.3.9.1	
References to other system information blocks and scheduling blocks	MP		References to other system information blocks and scheduling blocks 10.3.8.14	

Condition	Explanation
GSM	The IE is mandatory <u>present</u> if the IE "Supported PLMN Types" is set to 'GSM-MAP' or 'GSM-MAP AND ANSI-41', and not needed otherwise
ANSI-41	The IE is mandatory <u>present</u> if the IE "Supported PLMN Types" is set to 'ANSI-41' or 'GSM-MAP AND ANSI-41', and not needed otherwise

10.2.48.8.2 Scheduling Block 1

Information Element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP		References to other system information blocks 10.3.8.13	

10.2.48.8.3 Scheduling Block 2

Information Element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP		References to other system information blocks 10.3.8.13	

## 10.2.48.8.4 System Information Block type 1

The system information block type 1 contains NAS system information as well as UE timers and counters to be used in idle mode and in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>CN information elements</b>				
CN common GSM-MAP NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
CN domain system information list	MP	1 to <maxCNdo mains>		Send CN information for each CN domain.
>CN domain system information	MP		CN domain system information 10.3.1.2	
<b>UE information</b>				
UE Timers and constants in idle mode	MD		UE Timers and constants in idle mode 10.3.3.44	Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.44 apply and - For parameters with need OP, the parameters are absent
UE Timers and constants in connected mode	MD		UE Timers and constants in connected mode 10.3.3.43	Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.43 apply and - For parameters with need OP, the parameters are absent

## 10.2.48.8.5 System Information Block type 2

The system information block type 2 contains the URA identity.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>UTRAN mobility information elements</b>				
URA identity list	MP	1 ..<maxURA>		
>URA identity	MP		URA identity 10.3.2.6	

## 10.2.48.8.6 System Information Block type 3

The system information block type 3 contains parameters for cell selection and re-selection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB4 Indicator	MP		Boolean	TRUE indicates that SIB4 is broadcast in the cell.
<b>UTRAN mobility information elements</b>				
Cell identity	MP		Cell identity 10.3.2.2	
Cell selection and re-selection info	MP		Cell selection and re-selection info for SIB3/4 10.3.2.3	
Cell Access Restriction	MP		Cell Access Restriction 10.3.2.1	

10.2.48.8.7 System Information Block type 4

The system information block type 4 contains parameters for cell selection and re-selection to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>UTRAN mobility information elements</b>				
Cell identity	MP		Cell identity 10.3.2.2	
Cell selection and re-selection info	MP		Cell selection and re-selection info for SIB3/4 10.3.2.3	
Cell Access Restriction	MP		Cell Access Restriction 10.3.2.1	

10.2.48.8.8 System Information Block type 5

The system information block type 5 contains parameters for the configuration of the common physical channels in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB6 Indicator	MP		Boolean	TRUE indicates that SIB6 is broadcast in the cell.
<b>PhyCH information elements</b>				
PICH Power offset	MP		PICH Power offset 10.3.6.50	
CHOICE <i>mode</i>	MP			
>FDD				
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	This AICH Power offset also indicates the power offset for AP-AICH and for CD/CA-ICH.
>TDD				
>>PUSCH system information	OP		PUSCH system information 10.3.6.66	
>>PDSCH system information	OP		PDSCH system information 10.3.6.46	
>>TDD open loop power control	MP		TDD open loop power control 10.3.6.79	
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.57	Note 1
PRACH system information list	MP		PRACH system information list 10.3.6.55	
Secondary CCPCH system information	MP		Secondary CCPCH system information 10.3.6.72	
CBS DRX Level 1 information	CV-CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory <u>present</u> if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed in the message

10.2.48.8.9 System Information Block type 6

The system information block type 6 contains parameters for the configuration of the common and shared physical channels to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
PICH Power offset	MP		PICH Power offset 10.3.6.50	
CHOICE <i>mode</i>	MP			
>FDD				
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	This AICH Power offset also indicates the power offset for AP-AICH and for CD/CA-ICH.
>TDD				
>>PUSCH system information	OP		PUSCH system information 10.3.6.66	
>>PDSCH system information	OP		PDSCH system information 10.3.6.46	
>>TDD open loop power control	MP		TDD open loop power control 10.3.6.79	
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.57	Note 1
PRACH system information list	OP		PRACH system information list 10.3.6.55	
Secondary CCPCH system information	OP		Secondary CCPCH system information 10.3.6.72	
CBS DRX Level 1 information	CV-CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory <u>present</u> if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed

### 10.2.48.8.10 System Information Block type 7

The system information block type 7 contains the fast changing parameters UL interference and Dynamic persistence level.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>UL interference	MP		UL interference 10.3.6.87	
>TDD				(no data)
<b>PhyCH information elements</b>				
PRACHs listed in system information block type 5	MP	1 to <maxPRACH>		The order of the PRACHs is the same as in system information block type 5.
>Dynamic persistence level	MP		Dynamic persistence level 10.3.6.35	
PRACHs listed in system information block type 6	OP	1 to <maxPRA CH>		The order of the PRACHs is the same as in system information block type 6.
>Dynamic persistence level	MP		Dynamic persistence level 10.3.6.35	
Expiration Time Factor	MD		Expiration Time Factor 10.3.3.12	Default is 1.

#### 10.2.48.8.11 System Information Block type 8

NOTE: Only for FDD.

The system information block type 8 contains static CPCH information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>UE information</b>				
CPCH parameters	MP		CPCH parameters 10.3.3.7	
<b>PhyCH information elements</b>				
CPCH set info list	MP	1 to <maxCPC Hsets>		
>CPCH set info	MP		CPCH set info 10.3.6.13	
CSICH Power offset	MP		CSICH Power offset 10.3.6.15	

#### 10.2.48.8.12 System Information Block type 9

NOTE: Only for FDD.

The system information block type 9 contains CPCH information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
CPCH set persistence levels list	MP	..1 to <maxCPC Hsets>		
>CPCH set persistence levels	MP		CPCH persistence levels 10.3.6.12	

#### 10.2.48.8.13 System Information Block type 10

NOTE: Only for FDD.

The system information block type 10 contains information to be used by UEs having their DCH controlled by a DRAC procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>UE information</b>				
DRAC system information	MP		DRAC system information 10.3.3.9	DRAC information is sent for each class of terminal

#### 10.2.48.8.14 System Information Block type 11

The system information block type 11 contains measurement control information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB12 Indicator	MP		Boolean	TRUE indicates that SIB12 is broadcast in the cell.
<b>Measurement information elements</b>				
FACH measurement occasion info	OP		FACH measurement occasion info 10.3.7.8	
Measurement control system information	MP		Measurement control system information 10.3.7.47	

#### 10.2.48.8.15 System Information Block type 12

The system information block type 12 contains measurement control information to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Measurement information elements</b>				
FACH measurement occasion info	OP		FACH measurement occasion info 10.3.7.8	
Measurement control system information	MP		Measurement control system information 10.3.7.47	

#### 10.2.48.8.16 System Information Block type 13

The system information block type 13 contains ANSI-41 system information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
<b>CN Information Elements</b>				
CN Domain system information list	MP	1 to <maxCNdo mains>		Send CN information for each CN domain.
>CN Domain system information	MP		CN Domain system information 10.3.1.2	
<b>UE Information</b>				
UE timers and constants in idle mode	OP		UE timers and constants in idle mode 10.3.3.44	
Capability update requirement	MD		Capability update requirement 10.3.3.2	Default value is defined in subclause 10.3.3.2

#### 10.2.48.8.16.1 System Information Block type 13.1

The system information block type 13.1 contains the ANSI-41 RAND information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>ANSI-41 information elements</b>				
ANSI-41 RAND information	MP		ANSI-41 RAND information 10.3.9.6	

#### 10.2.48.8.16.2 System Information Block type 13.2

The system information block type 13.2 contains the ANSI-41 User Zone Identification information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>ANSI-41 information elements</b>				
ANSI-41 User Zone Identification information	MP		ANSI-41 User Zone Identification information 10.3.9.7	

## 10.2.48.8.16.3 System Information Block type 13.3

The system information block type 13.3 contains the ANSI-41 Private Neighbour List information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>ANSI-41 information elements</b>				
ANSI-41 Private Neighbour List information	MP		ANSI-41 Private Neighbour List information 10.3.9.5	

## 10.2.48.8.16.4 System Information Block type 13.4

The system information block type 13.4 contains the ANSI-41 Global Service Redirection information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>ANSI-41 information elements</b>				
ANSI-41 Global Service Redirection information	MP		ANSI-41 Global Service Redirection information 10.3.9.2	

## 10.2.48.8.17 System Information Block type 14

NOTE: Only for TDD.

The system information block type 14 contains parameters for common and dedicated physical channel uplink outer loop power control information to be used in both idle and connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
Individual Timeslot interference list	MP	1 to <maxTS>		
>Individual Timeslot interference	MP		Individual Timeslot interference 10.3.6.38	
Expiration Time Factor	MD		Expiration Time Factor 10.3.3.12	Default is 1.

## 10.2.48.8.18 System Information Block type 15

The system information block type 15 contains information useful for UE-based or UE-assisted positioning methods.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
GPS Data ciphering info	OP		UE positioning Cipher info 10.3.7.86	If this IE is present then the SIB types 15.1, 15.2 & 15.3 are ciphered in accordance with the Data Assistance Ciphering Algorithm specified in [18]
Reference position	MP		Ellipsoid point with altitude and uncertainty ellipsoid 10.3.8.4c	approximate position where the UE is located
GPS Reference Time	MP		UE positioning GPS reference time 10.3.7.96	
Satellite information	OP	1 to <maxSat>		This IE is present whenever bad (failed/failing) satellites are detected by UTRAN [18].
>BadSatID	MP		Enumerated(0..63)	

#### 10.2.48.8.18.1 System Information Block type 15.1

The system information block type 15.1 contains information useful for UE positioning DGPS Corrections. The DGPS Corrections message contents are based on a Type-1 message of DGPS specified in [13].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
DGPS corrections	MP		UE positioning GPS DGPS corrections 10.3.7.91	

#### 10.2.48.8.18.2 System Information Block type 15.2

The system information block type 15.2 contains information useful for GPS Navigation Model. These IE fields are based on information extracted from the subframes 1 to 3 of the GPS navigation message [12].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Transmission TOW	MP		Integer (0..604799)	The approximate GPS time-of-week when the message is broadcast. in seconds
SatID	MP		Enumerated(0..63)	Satellite ID
GPS Ephemeris and Clock Correction Parameters	MP		UE positioning GPS Ephemeris and Clock Correction parameters 10.3.7.90a	

10.2.48.8.18.3 System Information Block type 15.3

The system information block type 15.3 contains information useful for ionospheric delay, UTC offset, and Almanac. These IEs contain information extracted from the subframes 4 and 5 of the GPS navigation message, [12].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Transmission TOW	MP		Integer (0..604799)	The approximate GPS time-of-week when the message is broadcast. in seconds
GPS Almanac and Satellite Health	OP		UE positioning GPS almanac 10.3.7.89	
GPS ionospheric model	OP		UE positioning GPS ionospheric model 10.3.7.92	
GPS UTC model	OP		UE positioning GPS UTC model 10.3.7.97	
SatMask	CV- <i>Almanac</i>		Bitstring(1..32)	indicates the satellites that contain the pages being broadcast in this data set
LSB TOW	CV- <i>Almanac</i>		Bit string(8)	

Condition	Explanation
<i>Almanac</i>	This IE is <u>mandatory</u> present if the IE "GPS Almanac and Satellite Health" is present

10.2.48.8.18.4 System Information Block type 15.4

The system information block type 15.4 contains information useful for OTDOA based UE Positioning method.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
OTDOA Data ciphering info	OP		UE positioning Ciphering info 10.3.7.86	If this IE is present then the IE "OTDOA Assistance Data" is ciphered in accordance with the Data Assistance Ciphering Algorithm specified in [18]
OTDOA assistance data	MP		UE positioning OTDOA assistance data 10.3.7.103	

10.2.48.8.19 System Information Block type 16

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

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
<b>RB information elements</b>				
Predefined RB configuration	MP		Predefined RB configuration 10.3.4.7	
<b>TrCH Information Elements</b>				
Predefined TrCH configuration	MP		Predefined TrCH configuration 10.3.5.9	
<b>PhyCH Information Elements</b>				
Predefined PhyCH configuration	MP		Predefined PhyCH configuration 10.3.6.56	

#### 10.2.48.8.20 System Information Block type 17

NOTE: Only for TDD.

The system information block type 17 contains fast changing parameters for the configuration of the shared physical channels to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
PUSCH system information	OP		PUSCH system information 10.3.6.66	
PDSCH system information	OP		PDSCH system information 10.3.6.46	

#### 10.2.48.8.21 System Information Block type 18

The System Information Block type 18 contains PLMN identities of neighbouring cells to be considered in idle mode as well as in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Idle mode PLMN identities	OP		PLMN identities of neighbour cells 10.3.7.53a	
Connected mode PLMN identities	OP		PLMN identities of neighbour cells 10.3.7.53a	

### 10.2.49 SYSTEM INFORMATION CHANGE INDICATION

This message is used to send information on FACH to the UEs in state CELL\_FACH about coming modification of the system information.

RLC-SAP: TM

Logical channel: BCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>Other information elements</b>				
BCCH modification info	MP		BCCH modification info 10.3.8.1	

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.

## 10.2.50 TRANSPORT CHANNEL RECONFIGURATION

This message is used by UTRAN to configure the transport channel of a UE. This also includes a possible reconfiguration of physical channels. The message can also be used to assign a TFC subset and reconfigure physical channel.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
CHOICE <i>mode</i>	MP			
>FDD				
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

## 10.2.51 TRANSPORT CHANNEL RECONFIGURATION COMPLETE

This message is sent from the UE when a transport channel reconfiguration has been done.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
CHOICE <i>mode</i>	OP			
>FDD				(no data)
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95	
<b>RB Information elements</b>				
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	
Uplink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

## 10.2.52 TRANSPORT CHANNEL RECONFIGURATION FAILURE

This message is sent by UE if the configuration given by UTRAN is unacceptable or if the UE failed to establish the physical channel(s).

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

### 10.2.53 TRANSPORT FORMAT COMBINATION CONTROL

This message is sent by UTRAN to control the uplink transport format combination within the allowed transport format combination set.

RLC-SAP: TM, AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	CV- <i>notTM</i>		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	CV- <i>notTM</i>		RRC transaction identifier 10.3.3.36	
Integrity check info	CV- <i>notTM</i>		Integrity check info 10.3.3.16	
<b>TrCH information elements</b>				
CHOICE <i>mode</i>	MP			
>FDD				(no data)
>TDD				
>>TFCS Id	OP		Transport Format Combination Set Identity 10.3.5.21	
DPCH/PUSCH TFCS in uplink	MP		Transport Format Combination subset 10.3.5.22	
Activation time for TFC subset	CV- <i>notTMMD</i>		Activation time 10.3.3.1	Default value is "now"
TFC Control duration	CV- <i>notTMopt</i>		TFC Control duration 10.3.6.80	

Condition	Explanation
<i>NotTM</i>	The message type is not <del>included</del> -needed when transmitting the message on the transparent mode signalling DCCH and mandatory present otherwise.
<i>NotTMopt</i>	The information element is not <del>included</del> -needed when transmitting the message on the transparent mode signalling DCCH and is optional otherwise.
<i>NotTMMD</i>	The information element is not <del>included</del> -needed when transmitting the message on the transparent mode signalling DCCH and is Mandatory with default otherwise.

If transparent mode signalling is used and the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.

### 10.2.54 TRANSPORT FORMAT COMBINATION CONTROL FAILURE

This message is sent to indicate that a received TRANSPORT FORMAT COMBINATION CONTROL message could not be handled by the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

### 10.2.55 UE CAPABILITY ENQUIRY

The UE CAPABILITY ENQUIRY is used by the UTRAN to enquire inter-RAT classmarks from the UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Capability update requirement	MP		Capability update requirement 10.3.3.2	

### 10.2.56 UE CAPABILITY INFORMATION

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	OP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
UE radio access capability	OP		UE radio access capability 10.3.3.42	
UE radio access capability extension	OP		UE radio access capability extension 10.3.3.42a	
<b>Other information elements</b>				
UE system specific capability	OP	1 to <maxInter SysMessages>		
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	

## 10.2.57 UE CAPABILITY INFORMATION CONFIRM

This message is sent by UTRAN to confirm that UE capability information has been received.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied

## 10.2.58 UPLINK DIRECT TRANSFER

This message is used to transfer NAS messages for an existing signalling connection.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
<b>CN information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	
NAS message	MP		NAS message 10.3.1.8	
<b>Measurement information elements</b>				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

## 10.2.59 UPLINK PHYSICAL CHANNEL CONTROL

NOTE: Only for TDD.

This message is used to transfer uplink physical channel parameters to the UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE



Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	OP		Integrity check info 10.3.3.16	
<b>PhyCH information elements</b>				
CCTrCH power control info	OP		CCTrCH power control info 10.3.6.8	Power control information for one CCTrCH
Alpha	OP		Alpha 10.3.6.5	
Special Burst Scheduling	OP		Special Burst Scheduling 10.3.6.75a	UL Special Burst generation period in radio frames
Timing Advance Control	OP		UL Timing Advance Control 10.3.6.96	
PRACH Constant Value	OP		Constant value 10.3.6.11	Operator controlled PRACH Margin
PUSCH Constant Value	OP		Constant value 10.3.6.11	Operator controlled PUSCH Margin

## 10.2.60 URA UPDATE

This message is used by the UE to initiate a URA update procedure.

RLC-SAP: TM

Logical channel: CCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
U-RNTI	MP		U-RNTI 10.3.3.47	
RRC transaction identifier	CV-ProtErr		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
URA update cause	MP		URA update cause 10.3.3.46	
Protocol error indicator	MD		Protocol error indicator 10.3.3.27	Default value is FALSE
<b>Other information elements</b>				
Protocol error information	CV-ProtErr		Protocol error information 10.3.8.12	

Condition	Explanation
<i>ProtErr</i>	The IE is mandatory present if the IE "Protocol error indicator" has the value "TRUE" and not needed otherwise

### 10.2.61 URA UPDATE CONFIRM

This message confirms the URA update procedure and can be used to reallocate new RNTI information for the UE valid after the URA update.

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
U-RNTI	CV-CCCH		U-RNTI 10.3.3.47	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	

Condition	Explanation
CCCH	This IE is <del>only sent</del> <u>mandatory present</u> when CCCH is used <u>and not needed otherwise</u>

## 10.2.62 UTRAN MOBILITY INFORMATION

This message is used by UTRAN to allocate a new RNTI and to convey other UTRAN mobility related information to a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
UE Timers and constants in connected mode	OP		UE Timers and constants in connected mode 10.3.3.43	
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info full 10.3.1.3a	
<b>UTRAN Information Elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB Information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	

### 10.2.63 UTRAN MOBILITY INFORMATION CONFIRM

This message is used to confirm the new UTRAN mobility information for the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
<b>RB Information elements</b>				
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM. Only applicable if the UE is moving to CELL_DCH state due to this procedure
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	
Uplink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

## 10.2.64 UTRAN MOBILITY INFORMATION FAILURE

This message is sent to indicate a failure to act on a received UTRAN MOBILITY INFORMATION message.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.3 Information element functional definitions

### 10.3.1 CN Information elements

#### 10.3.1.1 CN domain identity

Identifies the type of core network domain.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CN domain identity	MP		Enumerated (CS domain, PS domain)	

#### 10.3.1.2 CN Domain System Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CN domain identity	MP		CN domain identity 10.3.1.1	
<i>CHOICE CN Type</i>				
<i>&gt;GSM-MAP</i>				
>>CN domain specific NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
<i>&gt;ANSI-41</i>				
>>CN domain specific NAS system information	MP		ANSI-41 NAS system information, 10.3.9.4	
CN domain specific DRX cycle length coefficient	MP		CN domain specific DRX cycle length coefficient, 10.3.3.6	

## 10.3.1.3 CN Information info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN identity	OP		PLMN identity 10.3.1.11	
CN common GSM-MAP NAS system information	OP		NAS system information (GSM-MAP) 10.3.1.9	
CN domain related information	OP	1 to <maxCNdomains>		
>CN domain identity	MP		CN domain identity 10.3.1.1	
>CN domain specific GSM-MAP NAS system info	MP		NAS system information (GSM-MAP) 10.3.1.9	

NOTE 1: Necessity of PLMN is FFS and for CN domain identity and NAS system information, the confirmation in SA WG2 is needed.

## 10.3.1.3a CN Information info full

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN identity	OP		PLMN identity 10.3.1.11	
CN common GSM-MAP NAS system information	OP		NAS system information (GSM-MAP) 10.3.1.9	
CN domain related information	OP	1 to <maxCNdomains>		
>CN domain identity	MP		CN domain identity 10.3.1.1	
>CN domain specific GSM-MAP NAS system info	MP		NAS system information (GSM-MAP) 10.3.1.9	
>CN domain specific DRX cycle length coefficient	MP		CN domain specific DRX cycle length coefficient, 10.3.3.6	

## 10.3.1.4 IMEI

This IE contains an International Mobile Equipment Identity. Setting specified in [11].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
IMEI	MP	15		The first element contains the first IMEI digit, the second element the second IMEI digit and so on.
>IMEI digit	MP		INTEGER(0..15)	

### 10.3.1.5 IMSI (GSM-MAP)

This IE contains an International Mobile Subscriber Identity, used towards a GSM-MAP type of PLMN. Setting specified in [11].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
IMSI	MP	6 to 15		The first element contains the first IMSI digit, the second element the second IMSI digit and so on.
>IMSI digit	MP		INTEGER(0..9)	

### 10.3.1.6 Intra Domain NAS Node Selector

This IE carries information to be used to route the establishment of a signalling connection to a CN node within a CN domain.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>version</i>	MP			
>R99				
>>CHOICE <i>CN type</i>	MP			
>>>GSM-MAP				
>>>>CHOICE <i>Routing basis</i>	MP			
>>>>>local (P)TMSI				TMSI allocated in the current LA or PTMSI allocated in the current RA
>>>>>>Routing parameter	MP		Bitstring (10)	The TMSI/ PTMSI consists of 4 octets (32bits). The bits are numbered from b0 to b31, with bit b0 being the least significant The "Routing parameter" bitstring consists of bits b14 through b23 of the TMSI/ PTMSI where bit b14 is the least significant.
>>>>>(P)TMSI of same PLMN, different (RA)LA				TMSI allocated in another LA of this PLMN or PTMSI allocated in another RA this PLMN
>>>>>>Routing parameter	MP		Bitstring (10)	The TMSI/ PTMSI consists of 4 octets (32bits). The bits are numbered from b0 to b31, with bit b0 being the least significant The "Routing parameter" bitstring consists of bits b14 through b23 of the TMSI/ PTMSI where bit b14 is the least significant.
>>>>>(P)TMSI of different PLMN				TMSI or a PTMSI allocated in another PLMN
>>>>>>>Routing parameter	MP		Bitstring (10)	The TMSI/ PTMSI consists of 4 octets (32bits). The bits are numbered from b0 to b31, with bit b0 being the least significant The "Routing parameter" bitstring consists of bits b14 through b23 of the TMSI/ PTMSI where bit b14 is the least significant.
>>>>>>>IMSI(response to IMSI paging)				NAS identity is IMSI
>>>>>>>>>Routing parameter	MP		Bitstring (10)	The "Routing parameter" bitstring consists of DecimalToBinary [(IMSI div 10) mod 1000]. The bits of the result are numbered from b0 to b9, with bit b0 being the least significant.
>>>>>>>>>IMSI(cause UE initiated event)				NAS identity is IMSI
>>>>>>>>>>>Routing parameter	MP		Bitstring (10)	The "Routing parameter" bitstring consists of DecimalToBinary [(IMSI div 10) mod 1000]. The bits of the result are numbered from b0 to b9, with bit b0 being the least significant.
>>>>>>>>>>>>>IMEI				NAS parameter is IMEI

>>>>>Routing parameter	MP		Bitstring (10)	The "Routing parameter" bitstring consists of DecimalToBinary [(IMEI div 10) mod 1000]. The bits of the result are numbered from b0 to b9, with bit b0 being the least significant.
>>>>>Spare 1			Bitstring (10)	This choice shall not be used in this version
>>>>>Spare 2			Bitstring (10)	This choice shall not be used in this version
>>>>Entered parameter	MP		Boolean	Entered parameter shall be set to TRUE if the most significant byte of the current LAI/RAI is different compared to the most significant byte of the LAI/RAI stored on the SIM; Entered parameter shall be set to FALSE otherwise
>>>ANSI-41			Bitstring (14)	All bits shall be set to 0
>Later			Bitstring(15)	This bitstring shall not be sent by mobiles that are compliant to this version of the protocol.

### 10.3.1.7 Location Area Identification

Identifies uniquely a location area for a GSM-MAP type of PLMN. Setting specified in [5].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN identity	MP		PLMN identity 10.3.1.11	
LAC	MP		Bit string(16)	The LAC bits are numbered b0-b15, where b0 is the least significant bit.

### 10.3.1.8 NAS message

A non-access stratum message to be transferred transparently through UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
NAS message	MP		Octet string (1..4095)	The first octet contains octet 1 [17] of the NAS message, the second octet contains octet 2 of the NAS message and so on.

### 10.3.1.9 NAS system information (GSM-MAP)

This information element contains system information that belongs to the non-access stratum for a GSM-MAP type of PLMN. This information is transparent to RRC. It may contain either information specific to one CN domain (CS or PS) or information common for both CN domains.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
GSM-MAP NAS system information	MP		Octet string(1..8 )	The first octet contains octet 1 [17] of the NAS system information element, the second octet contains octet 2 of the NAS system information element and so on.

### 10.3.1.10 Paging record type identifier

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Paging record type identifier	MP		Enumerated (IMSI (GSM-MAP), TMSI (GSM-MAP)/ P-TMSI, IMSI (DS-41), TMSI (DS-41))	

### 10.3.1.11 PLMN identity

This information element identifies a Public Land Mobile Network for a GSM-MAP type of PLMN. Setting of digits is defined in [11].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MCC	MP	3		The first element contains the first MCC digit, the second element the second MCC digit and so on.
>MCC digit	MP		INTEGER(0..9)	
MNC	MP	2 to 3		The first element contains the first MNC digit, the second element the second MNC digit and so on.
>MNC digit	MP		INTEGER(0..9)	

### 10.3.1.12 PLMN Type

Identifies the type of Public Land Mobile Network (PLMN). This IE shall be used to control the interpretation of network dependent messages and information elements in the RRC protocol.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN Type	MP		Enumerated (GSM-MAP, ANSI-41, GSM-MAP and ANSI-41)	

### 10.3.1.13 P-TMSI (GSM-MAP)

This IE contains a Packet Temporary Mobile Subscriber Identity, used towards a GSM-MAP type of PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
P-TMSI	MP		Bit string (32)	Setting specified in [11]. The P-TMSI bits are numbered b0-b31, where b0 is the least significant bit.

### 10.3.1.14 RAB identity

This information element uniquely identifies a radio access bearer within a CN domain.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>RAB identity type</i>	MP			
>RAB identity (GSM-MAP)			Bit string (8)	Formatted according to [5]. The bits are numbered b1-b8, where b1 is the least significant bit.
>RAB identity (ANSI-41)			Bit string (8)	The bits are numbered b1-b8, where b1 is the least significant bit.

CHOICE <i>NAS binding info type</i>	Condition under which the given <i>RAB identity type</i> is chosen
RAB identity (GSM-MAP)	PLMN is of type GSM-MAP
RAB identity (ANSI-41)	PLMN is of type ANSI-41

### 10.3.1.15 Routing Area Code

Identifies a routing area within a location area for a GSM-MAP type of PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Routing Area Code	MP		Bit string(8)	Setting specified in [11]. The Routing Area Code bits are numbered b0 to b7, where b0 is the least significant bit.

### 10.3.1.16 Routing Area Identification

Identifies uniquely a routing area for a GSM-MAP type of PLMN. Setting specified in [11].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
LAI	MP		Location area identification 10.3.1.7	
RAC	MP		Routing area code 10.3.1.15	

### 10.3.1.17 TMSI (GSM-MAP)

This IE contains a Temporary Mobile Subscriber Identity, used towards a GSM-MAP type of PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TMSI (GSM-MAP)	MP		Bit string (32)	Setting specified in [11]. The TMSI bits are numbered b0-b31, where b0 is the least significant bit.

## 10.3.2 UTRAN mobility Information elements

### 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	<i>CV-Barred</i>		Enumerated(not allowed, allowed)	
$T_{\text{barred}}$	<i>CV-Barred</i>		Integer (10,20,40,80,160,320,640,1280)	[4]
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
<i>Barred</i>	PresenceThe IE is mandatory present if the IE "Cell Barred" has the value "Barred"; otherwise the element is not needed in the message.

### 10.3.2.2 Cell identity

This information element identifies a cell unambiguously within a PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell identity	MP		bit string(28)	

## 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	
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.
CHOICE mode	MP			
>FDD				
>>S <sub>intrasearch</sub>	OP		Integer (-32..20 by step of 2)	[4] [dB]
>>S <sub>intersearch</sub>	OP		Integer (-32..20 by step of 2)	[4] [dB]
>>S <sub>searchHCS</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>>RAT List	OP	1 to <maxOther RAT>		
>>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	
>>>>S <sub>search,RAT</sub>	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] [dB]
>>>>S <sub>HCS,RAT</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>>>S <sub>limit,SearchRAT</sub>	OP		Integer (-32..20 by step of 2)	[4] [dB]
>>Qqualmin	MP		Integer (-24..0)	Ec/N0, [dB]
>>Qrxlevmin	MP		Integer (-115..-25 by step of 2)	RSCP, [dBm]
>TDD				
>>S <sub>intrasearch</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>S <sub>intersearch</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>S <sub>searchHCS</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>>>RAT List	OP	1 to <maxOther RAT>		
>>>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	
>>>>>S <sub>search,RAT</sub>	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] [dB]
>>>>>S <sub>HCS,RAT</sub>	OP		Integer (-	[4]

			105..91 by step of 2)	[dB]
>>>S <sub>limit,SearchRAT</sub>	MP		Integer (-105..91 by step of 2)	[4] [dB]
>>Q <sub>rxlevmin</sub>	MP		Integer (-115..-25 by step of 2)	RSCP, [dBm]
Q <sub>hyst1s</sub>	MP		Integer (0..40 by step of 2)	[4] [dB]
Q <sub>hyst2s</sub>	CV-FDD-Quality-Measure		Integer (0..40 by step of 2)	Default value is Q <sub>hyst1s</sub> [4] [dB]
T <sub>reselections</sub>	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 allowedThe IE is not needed 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 <sub>s,n</sub>	MD		Integer(-50..50)	Default value is 0. [dB]
Qoffset2 <sub>s,n</sub>	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 >FDD	MP			
>>Qqualmin	MD		Integer (-24..0)	Ec/NO, [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, [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



10.3.2.5 Mapping Info

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Mapping List	MP	1 to <MaxRAT>		
>RAT	MP		Enumerated (UTRA FDD, UTRA TDD, GSM, cdma2000)	
>Mapping Function Parameter List	MP	1 to <maxMeas Intervals>		
>>Function type	MP		Enumerated (linear, function type 2, function type 3, function type 4)	Type of the function within the interval.
>>Map_parameter_1	MD		Integer (0..99)	Parameter describing the mapping function between the quality measurement and the representing quality value, see [4]. Default value is zero for the first interval or otherwise the value of Map_parameter_2 of the interval before.
>>Map_parameter_2	MP		Integer (0..99)	Parameter describing the mapping function between the quality measurement and the representing quality value, see [4].
>>Upper_limit	CV- <i>MaxInt</i>		Integer (1..MaxMeas )	Upper limit of interval for which the Map_parameter_1 and Map_parameter_2 are valid. MaxMeas = 25 if RAT = UTRA FDD / CPICH Ec/N0, MaxMeas = 91 if RAT = UTRA TDD or if RAT = UTRA FDD/ CPICH RSCP, MaxMeas = 63 if RAT = GSM.

Condition	Explanation
<i>MaxInt</i>	This <del>information is only sent</del> <u>mandatory present</u> if Mapping Function Parameter List has not reached <u>maxMeasIntervals</u> and is not needed otherwise.

10.3.2.6 URA identity

Gives the identity of the UTRAN Registration Area. It can be used to indicate to the UE which URA it shall use in case of overlapping URAs.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
URA identity	MP		bit string(16)	

## 10.3.3 UE Information elements

### 10.3.3.1 Activation time

Activation Time defines the frame number/time at which the operation/changes caused by the related message shall take effect. Values between 0 and 255 indicate the absolute value of CFN (Connection Frame Number) of that frame number/time.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Activation time	MP		Integer(0..255)	CFN [10]

### 10.3.3.2 Capability Update Requirement

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

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

Default value is:

"UE radio capability FDD update requirement" = false

"UE radio capability TDD update requirement" = false

"System specific capability update requirement" not present.

### 10.3.3.3 Cell update cause

Indicates the cause for cell update.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell update cause	MP		Enumerated (cell reselection, periodical cell update, uplink data transmission, paging response, re-entered service area, radio link failure, RLC unrecoverable error)	At least one spare value needed.

### 10.3.3.4 Ciphering Algorithm

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ciphering algorithm	MP		Enumerated (UEA0, UEA1)	

### 10.3.3.5 Ciphering mode info

This information element contains the ciphering specific security mode control information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ciphering mode command	MP		Enumerated (start/restart, stop)	
Ciphering algorithm	CV- <i>notStop</i>		Ciphering algorithm 10.3.3.4	
Ciphering activation time for DPCH	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM. Only applicable if the UE is already in CELL_DCH state
Radio bearer downlink ciphering activation time info	OP		RB activation time info, 10.3.4.13	Used for radio bearers mapped on RLC-AM or RLC-UM

Condition	Explanation
<i>notStop</i>	The IE is mandatory <u>present</u> if the IE "Ciphering mode command" has the value "start/restart", otherwise the IE is not needed in the message.

### 10.3.3.6 CN domain specific DRX cycle length coefficient

A coefficient in the formula to count the paging occasions to be used by a specific UE (specified in [4]).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CN domain specific DRX cycle length coefficient	MP		Integer(6...9)	Refers to 'k' in the formula as specified in [4], Discontinuous reception

### 10.3.3.7 CPCH Parameters

NOTE: Only for FDD.

These parameters are used by any UE using any CPCH set allocated to the cell that is broadcasting this system information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Initial Priority Delay	OP	1 to maxASC		Initial delays for ASC priority.
>NS_IP	MP		Integer (0...28)	Number of slots for initial fixed delay for each ASC priority level
Backoff control parameters	MP			
>N_ap_retrans_max	MP		Integer (1...64)	Max number of AP transmissions without AP-AICH response, a PHY parameter.
>N_access_fails	MP		Integer (1...64)	Max number of preamble ramping cycles when NAK response received, a MAC parameter.
>NF_bo_no_aich	MP		Integer (0...31)	Number of frames for UE backoff after N <sub>ap_retrans_max</sub> unsuccessful AP access attempts, a MAC parameter.
>NS_bo_busy	MP		Integer (0...63)	Number of slots for UE fixed backoff after access attempt to busy CPCH, a MAC parameter.
>NF_bo_all_busy	MP		Integer (0...31)	Max number of frames for UE backoff after access attempt to last busy CPCH, a MAC parameter. UE randomly selects backoff value from range (0..NF_bo_all_busy)
>NF_bo_mismatch	MP		Integer (0...127)	Max number of frames for the UE backoff after received mismatch on CD/CA-ICH, a MAC parameter. UE randomly selects backoff value from range (0..NF_bo_mismatch)
>T_CPCH	MP		Enumerated (0, 1)	CPCH channel timing used to determine Tau, a PHY parameter
Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands
TPC step size	CV-algo		Integer (1, 2)	In dB
DL DPCCH BER	MP		Integer (0..63)	The BER quality value shall be set in the range $0 \leq \text{DPCCH BER} \leq 1$ in the unit BER_dB where:  BER_dB_0: DPCCH BER = 0  BER_dB_1: $-\infty < \text{Log}_{10}(\text{DPCCH BER}) < -4.03$  BER_dB_2: $-4.03 \leq \text{Log}_{10}(\text{DPCCH BER}) < -3.965$  BER_dB_3: $-3.965 \leq \text{Log}_{10}(\text{DPCCH BER}) < -3.9$ ... BER_dB_61: $-0.195 \leq \text{Log}_{10}(\text{DPCCH BER}) < -0.13$  BER_dB_62: $-0.13 \leq$

				Log10(DPCCH BER) < -0.065 BER_dB_63: -0.065 ≤ Log10(DPCCH BER) ≤ 0
--	--	--	--	--

Condition	Explanation
<i>algo</i>	The IE is mandatory present if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

### 10.3.3.8 C-RNTI

The cell RNTI (C-RNTI) identifies a UE having a RRC connection within a cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
C-RNTI	MP		bit string(16)	

### 10.3.3.9 DRAC system information

Information element	Need	Multi	Type and reference	Semantics description
DRAC system information	MP	1 to <maxDRA Cclasses>		DRAC information is sent for each class of terminal
>Transmission probability	MP		Transmission probability 10.3.3.39	
>Maximum bit rate	MP		Maximum bit rate 10.3.3.20	

### 10.3.3.10 RRC State Indicator

Indicates to a UE the RRC state to be entered.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RRC State indicator	MP		Enumerated(CELL_DCH, CELL_FACH, CELL_PCH, URA_PCH)	

### 10.3.3.11 Establishment cause

Cause for an RRC connection establishment request.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Establishment cause	MP		Enumerated( Originating Conversational Call, Originating Streaming Call, Originating Interactive Call, Originating Background Call, Originating Subscribed traffic Call, Terminating Conversational Call, Terminating Streaming Call, Terminating Interactive Call, Terminating Background Call, Emergency Call, Inter-RAT cell re-selection, Inter-RAT cell change order, Registration, Detach, Originating High Priority Signalling, Originating Low Priority Signalling, Call re-establishment, Terminating High Priority Signalling, Terminating Low Priority Signalling, Terminating – cause unknown)	At least one spare value needed.

10.3.3.12 Expiration Time Factor

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Expiration Time Factor	MP		Enumerated( 2times, 4times, 8times, 16times, 32times, 64times, 128times, 256times)	

10.3.3.13 Failure cause

Cause for failure to perform the requested procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	MP		Enumerated (configuration unsupported, physical channel failure, incompatible simultaneous reconfiguration, protocol error, compressed mode runtime error, cell update occurred, invalid configuration, configuration incomplete, unsupported measurement)	At least one spare value needed.

### 10.3.3.14 Failure cause and error information

Cause for failure to perform the requested procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	MP		Failure cause 10.3.3.13	
Protocol error information	CV-ProtErr		Protocol error information 10.3.8.12	
Deleted TGPSI	CV-CompModeErr		TGPSI 10.3.6.82	

Condition	Explanation
<i>ProtErr</i>	Presence-The IE is mandatory <u>present</u> if the IE "Failure cause" has the value "Protocol error"; otherwise the element is not needed in the message.
<i>CompModeErr</i>	Presence-The IE is mandatory <u>present</u> if the IE "Failure cause" has the value "Compressed mode runtime error"; otherwise the element is not needed in the message

### 10.3.3.15 Initial UE identity

This information element identifies the UE at a request of an RRC connection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>UE id type</i>	MP			
>IMSI (GSM-MAP)			IMSI (GSM-MAP) 10.3.1.5	
>TMSI and LAI (GSM-MAP)				
>>TMSI (GSM-MAP)	MP		TMSI (GSM-MAP) 10.3.1.17	
>>LAI (GSM-MAP)	MP		Location Area Identification 10.3.1.7	
>P-TMSI and RAI (GSM-MAP)				
>>P-TMSI (GSM-MAP)	MP		P-TMSI (GSM-MAP) 10.3.1.13	
>>RAI (GSM-MAP)	MP		Routing Area Identification 10.3.1.16	
>IMEI			IMEI 10.3.1.4	
>ESN (DS-41)			bitstring (SIZE (32))	TIA/EIA/IS-2000-4
>IMSI (DS-41)			octetstring (SIZE (5..7))	TIA/EIA/IS-2000-4
>IMSI and ESN (DS-41)				TIA/EIA/IS-2000-4
>>IMSI (DS-41)	MP		octetstring (SIZE (5..7))	TIA/EIA/IS-2000-4
>>ESN (DS-41)	MP		bitstring (SIZE (32))	TIA/EIA/IS-2000-4
>TMSI (DS-41)			octetstring (SIZE (2..12))	TIA/EIA/IS-2000-4

### 10.3.3.16 Integrity check info

The Integrity check info contains the RRC message sequence number needed in the calculation of XMAC-I [40] and the calculated MAC-I.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message authentication code	MP		bit string(32)	MAC-I [40]. The Message Authentication Code bits are numbered b0-b31, where b0 is the least significant bit. The 27 MSB of the IE shall be set to zero and the 5 LSB of the IE shall be set to the used signalling radio bearer identity when the encoded RRC message is used as the MESSAGE parameter in the integrity protection algorithm.
RRC Message sequence number	MP		Integer (0..15)	The local RRC hyper frame number (RRC HFN) is concatenated with the RRC message sequence number to form the input parameter COUNT-I for the integrity protection algorithm. The IE value shall be set to zero when the encoded RRC message is used as the MESSAGE parameter in the integrity protection algorithm.

### 10.3.3.17 Integrity protection activation info

This IE contains the time, in terms of RRC sequence numbers, when a new integrity protection configuration shall be activated for the signalling radio bearers.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RRC message sequence number list	MP	4 to 5		The RRC sequence number when a new integrity protection configuration shall be applied, for CCCH (=RB0) and signalling radio bearers in the order RB0, RB1, RB2, RB3, RB4.  The value for RB1 shall be ignored if this IE was included in a RRC message sent on RB1.  The value for RB2 shall be ignored if this IE was included in a RRC message sent on RB2.
>RRC message sequence number	MP		Integer (0..15)	

### 10.3.3.18 Integrity protection Algorithm

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Integrity protection algorithm	MP		Enumerated (UIA1)	

10.3.3.19 Integrity protection mode info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Integrity protection mode command	MP		Enumerated(start, modify)	
Downlink integrity protection activation info	CV-modify		Integrity protection activation info 10.3.3.17	
Integrity protection algorithm	OP		Integrity protection algorithm 10.3.3.18	
Integrity protection initialisation number	CV-start		Bitstring(32)	FRESH [40]

Condition	Explanation
Start	The IE is mandatory <u>present</u> if the IE "Integrity protection mode command" has the value "start ", otherwise it is not needed in the message.
Modify	The IE is <u>only mandatory</u> present if the IE "Integrity protection mode command" has the value "modify" <u>and not needed otherwise</u>

10.3.3.20 Maximum bit rate

NOTE: Only for FDD.

Indicates the maximum user bit rate allowed on a DCH controlled by DRAC procedure for the transmission period (Transmission time validity).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Maximum bit rate	MP		integer(0..512 by step of 16)	=kbit/s

## 10.3.3.21 Measurement capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Need for downlink compressed mode</b>				
FDD measurements	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on FDD
TDD measurements	CV- <i>tdd_sup</i>		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on TDD
GSM 900	CV- <i>Gsm900_s upM</i>		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on GSM 900
DCS 1800	CV- <i>Gsm1800_sup</i>		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on DCS 1800
GSM 1900	CV- <i>Gsm1900_sup</i>		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on GSM 1900
Multi-carrier measurement	CV- <i>mc_sup</i>		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on multi-carrier
<b>Need for uplink compressed mode</b>				
FDD measurements	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on FDD
TDD measurements	CV- <i>tdd_sup</i>		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on TDD
GSM 900	CV- <i>Gsm900_s up</i>		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on GSM 900
DCS 1800	CV- <i>Gsm1800_sup</i>		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on DCS 1800
GSM 1900	CV- <i>Gsm1900_sup</i>		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on GSM 1900
Multi-carrier measurement	CV- <i>mc_sup</i>		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on multi-carrier

Condition	Explanation
<i>tdd_sup</i>	<del>Presence</del> <u>The IE is mandatory present</u> if IE Multi-mode capability has the value "TDD" or "FDD/TDD". Otherwise this field is not needed in the message.
<i>Gsm900_sup</i>	<del>Presence is needed</del> <u>The IE is mandatory present</u> if the IE "Inter-RAT UE radio access capability" indicates support for GSM900 <del>and not needed otherwise.</del> <del>Absence is needed if the IE "Inter-RAT UE radio access capability" indicates no support for GSM900.</del>
<i>Gsm1800_sup</i>	<del>Presence is needed</del> <u>The IE is mandatory present</u> if the IE "Inter-RAT UE radio access capability" indicates support for GSM1800. <del>And not needed otherwise</del> <del>Absence is needed if the IE "Inter-RAT UE radio access capability" indicates no support for GSM1800.</del>
<i>Gsm1900_sup</i>	<del>Presence is needed</del> <u>The IE is mandatory present</u> if the IE "Inter-RAT UE radio access capability" indicates support for GSM1900 <del>and not needed otherwise.</del> <del>Absence is needed if the IE "Inter-RAT UE radio access capability" indicates no support for GSM1900.</del>
<i>mc_sup</i>	<del>Presence</del> <u>The IE is mandatory present</u> if IE Support of multi-carrier has the value TRUE. Otherwise this field is not needed in the message.

### 10.3.3.21a Measurement capability extension

This IE may be used to replace the measurement capability information provided within IE "Measurement capability".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
FDD measurements	MP	1 to <maxFreq BandsFDD >		
>FDD Frequency band	MD		Enumerated(FDD2100, FDD1900)	The default value is the same as indicated in the IE "Frequency band" included in the IE " UE radio access capability extension". At least one spare value is needed
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on the FDD frequency band indicated by the IE "FDD Frequency band"
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on the FDD frequency band indicated by the IE "FDD Frequency band"
TDD measurements	CV- <i>tdd_sup</i>	1 to <maxFreq BandsTDD >		
>TDD Frequency band	MP		Enumerated(a, b, c)	
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on TDD frequency band indicated by the IE "TDD Frequency band"
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on TDD frequency band indicated by the IE "TDD Frequency band"
GSM measurements	CV- <i>gsm_sup</i>	1 to <maxFreq BandsGS M>		
>GSM Frequency band	MP		Enumerated(GSM450, GSM480, GSM850, GSM900P, GSM900E, GSM1800, GSM1900)	as defined in [45] at least one spare value
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on GSM frequency band indicated by the IE "GSM Frequency band"
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on GSM frequency band indicated by the IE "GSM Frequency band"

Multi-carrier measurement	CV- <i>mc_sup</i>			
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on multi-carrier
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on multi-carrier

Condition	Explanation
<i>tdd_sup</i>	Presence-The IE is mandatory <u>present</u> if IE Multi-mode capability has the value "TDD" or "FDD/TDD". Otherwise this field is not needed in the message.
<i>gsm_sup</i>	Presence-The IE is mandatory <u>present</u> if IE Support of GSM has the value TRUE. Otherwise this field is not needed in the message.
<i>mc_sup</i>	Presence-The IE is mandatory <u>present</u> if IE Support of multi-carrier has the value TRUE. Otherwise this field is not needed in the message.

### 10.3.3.22 Paging cause

Cause for a CN originated page.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Paging cause	MP		Enumerated( Terminating Conversational Call, Terminating Streaming Call, Terminating Interactive Call, Terminating Background Call, Terminating High Priority Signalling, Terminating Low Priority Signalling, Terminating – cause unknown )	

## 10.3.3.23 Paging record

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>CHOICE <i>Used paging identity</i></b>	MP			
>CN identity				
>>Paging cause	MP		Paging cause 10.3.3.22	
>>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>>CHOICE <i>UE Identity</i>	MP			
>>>>IMSI (GSM-MAP)			IMSI (GSM-MAP) 10.3.1.5	
>>>>TMSI (GSM-MAP)			TMSI (GSM-MAP) 10.3.1.17	
>>>>P-TMSI (GSM-MAP)			P-TMSI (GSM-MAP) 10.3.1.13	
>>>>IMSI (DS-41)			TIA/EIA/IS-2000-4	
>>>>TMSI (DS-41)			TIA/EIA/IS-2000-4	
>UTRAN identity				
>>U-RNTI	MP		U-RNTI 10.3.3.47	
>>>CN originated page to connected mode UE	OP			
>>>>Paging cause	MP		Paging cause 10.3.3.22	
>>>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>>>Paging record type identifier	MP		Paging record type identifier 10.3.1.10	

Condition	Explanation
<b>CHOICE <i>Used paging identity</i></b>	<b>Condition under which the given <i>used paging identity</i> is chosen</b>
CN identity	For CN originating pages (for idle mode UEs)
UTRAN identity	For UTRAN originating pages (for connected mode UEs)

## 10.3.3.24 PDCP capability

Indicates which algorithms and which value range of their parameters are supported by the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Support for lossless SRNS relocation	MP		Boolean	TRUE means supported
Support for RFC2507	MP		Boolean	TRUE means supported
Max HC context space	CV- <i>hc_sup</i>		Integer(512, 1024, 2048, 4096, 8192)	

Condition	Explanation
<i>hc_sup</i>	<del>Presence</del> The IE is mandatory <u>present</u> if IE Support for RFC 2507 = TRUE. Otherwise this field is not needed in the message



## 10.3.3.25 Physical channel capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
<b>Downlink physical channel capability information elements</b>				
FDD downlink physical channel capability	CH- <i>fdd_req_su</i> <i>p</i>			
>Max no DPCH/PDSCH codes	MP		Integer (1..8)	Maximum number of DPCH/PDSCH codes to be simultaneously received
>Max no physical channel bits received	MP		Integer (600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800)	Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)
>Support for SF 512	MP		Boolean	TRUE means supported
>Support of PDSCH	MP		Boolean	TRUE means supported
>Simultaneous reception of SCCPCH and DPCH	MP		Boolean	TRUE means supported
>Simultaneous reception of SCCPCH, DPCH and PDSCH	CV- <i>if_sim_rec</i> <i>_pdsch</i> <i>_sup</i>		Boolean	TRUE means supported
>Max no of S-CCPCH RL	CV- <i>if_sim_rec</i>		Integer(1)	Maximum number of simultaneous S-CCPCH radio links
TDD downlink physical channel capability	CH- <i>tdd_req_su</i> <i>p</i>			
>Maximum number of timeslots per frame	MP		Integer (1..14)	
>Maximum number of physical channels per frame	MP		Integer (1..224)	
>Minimum SF	MP		Integer (1, 16)	
>Support of PDSCH	MP		Boolean	TRUE means supported
>Maximum number of physical channels per timeslot	MP		Integer (1..16)	
<b>Uplink physical channel capability information elements</b>				
FDD uplink physical channel capability	CH- <i>fdd_req_su</i> <i>p</i>			
>Maximum number of DPDCH bits transmitted per 10 ms	MP		Integer (600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600)	
>Support of PCPCH	MP		Boolean	TRUE means supported
TDD uplink physical channel capability	CH- <i>tdd_req_su</i> <i>p</i>			
>Maximum Number of timeslots	MP		Integer	

per frame			(1..14)	
>Maximum number of physical channels per timeslot	MP		Integer (1, 2)	
>Minimum SF	MP		Integer (1, 2, 4, 8, 16)	
>Support of PUSCH	MP		Boolean	TRUE means supported

Condition	Explanation
<i>if_sim_rec_pdsch_sup</i>	<del>Presence</del> The IE is mandatory <u>present</u> if IE Simultaneous reception of SCCPCH and DPCH = True and IE Support of PDSCH = True. Otherwise this field is not needed in the message.
<i>if_sim_rec</i>	<del>Presence</del> The IE is mandatory <u>present</u> if IE capability Simultaneous reception of SCCPCH and DPCH = True. Otherwise this field is not needed in the message.
<i>tdd_req_sup</i>	<del>Presence</del> The IE is mandatory <u>present</u> if IE Multi-mode capability has the value "TDD" or "FDD/TDD" and a TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
<i>fdd_req_sup</i>	<del>Presence</del> The IE is mandatory <u>present</u> if IE Multi-mode capability has the value "FDD" or "FDD/TDD" and a FDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

### 10.3.3.26 Protocol error cause

This IE indicates the cause for a message or information that was not comprehended.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error cause	MP		Enumerated (ASN.1 violation or encoding error, Message type non-existent or not implemented, Message not compatible with receiver state, Information element value not comprehended, Conditional information element error, Message extension not comprehended)	At least one spare value needed.

### 10.3.3.27 Protocol error indicator

This IE indicates whether a message was transmitted due to a protocol error or not.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Protocol error indicator	MP		Boolean	TRUE means a protocol error occurred. FALSE means a protocol error did not occur.

### 10.3.3.28 RB timer indicator

This IE is used to indicate to UTRAN if the timers T314 or T315 has expired in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T314 expired	MP		Boolean	TRUE means that the timer has expired or the stored value is zero. FALSE means that the timer has not expired.
T315 expired	MP		Boolean	TRUE means that the timer has expired or the stored value is zero. FALSE means that the timer has not expired.

### 10.3.3.29 Redirection info

This IE is used to redirect the UE to another frequency or other system.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Redirection Information</i>	MP			
>Frequency info			Frequency info 10.3.6.36	
>Inter-RAT info			Inter-RAT info 10.3.7.25	

### 10.3.3.30 Re-establishment timer

This information element indicates which timer to associate with RAB.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Re-establishment timer	MP		Enumerated(useT314, useT315)	

### 10.3.3.31 Rejection cause

Cause for rejection of RRC connection establishment request.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Rejection cause	MP		Enumerated(congestion, unspecified)	

## 10.3.3.32 Release cause

Cause for release of RRC connection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Release cause	MP		Enumerated (normal event, unspecified, pre-emptive release, congestion, re-establishment reject, user inactivity), directed signalling connection re-establishment)	

## 10.3.3.33 RF capability FDD

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE power class	MP		Enumerated(1..4)	as defined in [21]
Tx/Rx frequency separation	MP		Enumerated(190, 174.8-205.2, 134.8-245.2)	In MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band a (as defined in [21]).

## 10.3.3.33a RF capability FDD extension

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE power class extension	MP		Enumerated(1..4)	as defined in [21]. At least one spare value is needed
Tx/Rx frequency separation	MP		Enumerated(190, 174.8-205.2, 134.8-245.2)	In MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band a (as defined in [21]).

## 10.3.3.33b RF capability TDD

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE power class	MP		Enumerated (1..4)	as defined in [22]
Radio frequency bands	MP		Enumerated(a, b, c, a+b, a+c, b+c, a+b+c)	as defined in [22]
Chip rate capability	MP		Enumerated(3.84Mcps, 1.28Mcps)	as defined in [22]

## 10.3.3.34 RLC capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Total RLC AM buffer size	MP		Integer (2,10,50,100,150,500,1000)	Total receiving and transmitting RLC AM buffer capability in kBytes
Maximum RLC AM Window Size	MP		Integer(2047,4095)	Maximum supported RLC TX and RX window in UE
Maximum number of AM entities	MP		Integer (3,4,5,6,8,16,30)	

## 10.3.3.35 RLC re-establish indicator

This IE is used to re-configure AM RLC on c-plane and u-plane.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RLC re-establish indicator	MP		Boolean	TRUE means re-establish required FALSE means re-establish not required

## 10.3.3.36 RRC transaction identifier

This IE contains an identification of the RRC procedure transaction local for the type of the message this IE was included within.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RRC transaction identifier	MP		Integer (0..3)	

## 10.3.3.37 Security capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ciphering algorithm capability	MP			
>UEA0	MP		Boolean	The value TRUE means that an unciphered connection after the Security mode control procedure is accepted by the UE.
>UEA1	MP		Boolean	The value TRUE means that UEA1, Kasumi, is supported
>Spare	MP	14	Boolean	Shall be set to FALSE by UEs complying with this version of the protocol.
Integrity protection algorithm capability	MP			
>UIA1	MP		Boolean	The value TRUE means that UIA1, Kasumi, is supported
>Spare	MP	15	Boolean	Shall be set to FALSE by UEs complying with this version of the protocol.

NOTE: The UE shall support at least one UEAx other than UEA0 and one UIAx.

## 10.3.3.38 START

There is a START value per CN domain. The START is used to initialise the 20 MSBs of all hyper frame numbers (MAC-d HFN, RLC UM HFN, RLC AM HFN, RRC HFN) for a CN domain.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
START	MP		Bit string (20)	The START [40] bits are numbered b0-b19, where b0 is the least significant bit.

## 10.3.3.39 Transmission probability

NOTE: Only for FDD.

Indicates the probability for a mobile to be allowed to transmit on a DCH controlled by DRAC procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission probability	MP		Real(0.125.. 1.0 by step of 0.125)	probability

## 10.3.3.40 Transport channel capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
<b>Downlink transport channel capability information elements</b>				
Max no of bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks received at an arbitrary time instant
Max convolutionally coded bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all convolutionally coded transport blocks received at an arbitrary time instant
Max turbo coded bits received	CV-turbo_dec_sup		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all turbo coded transport blocks received at an arbitrary time instant
Maximum number of simultaneous transport channels	MP		Integer(4, 8, 16, 32)	
Maximum number of simultaneous CCTrCH	MP		Integer (1..8)	
Max no of received transport blocks	MP		Integer(4, 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks received within TTIs that end at within the same 10ms interval
Maximum number of TFC in the TFCS	MP		Integer(16, 32, 48, 64, 96, 128, 256, 512, 1024)	
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)	
Support for turbo decoding	MP		Boolean	TRUE means supported
<b>Uplink transport channel capability information elements</b>				
Max no of bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks transmitted at an arbitrary time instant
Max convolutionally coded bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480,	Maximum sum of number of bits of all convolutionally coded transport blocks transmitted at an arbitrary time instant

			40960, 81920, 163840)	
Max turbo coded bits transmitted	CV-turbo_enc_sup		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all turbo coded transport blocks transmitted at an arbitrary time instant
Maximum number of simultaneous transport channels	MP		Integer(2, 4, 8, 16, 32)	
Maximum number of simultaneous CCTrCH of DCH type	CH-tdd_req_sup		Integer (1..8)	
Max no of transmitted transport blocks	MP		Integer(2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks transmitted within TTIs that start at the same time
Maximum number of TFC in the TFCS	MP		Integer(4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024)	
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)	
Support for turbo encoding	MP		Boolean	TRUE means supported

Condition	Explanation
turbo_dec_sup	Presence-The IE is mandatory <u>present</u> if IE Support of turbo decoding = True. Otherwise this field is not needed in the message.
turbo_enc_sup	Presence-The IE is mandatory <u>present</u> if IE Support of turbo encoding = True. Otherwise this field is not needed in the message.
tdd_req_sup	Presence-The IE is mandatory <u>present</u> if IE Multi-mode capability has the value "TDD" or "FDD/TDD" and a TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

10.3.3.41 UE multi-mode/multi-RAT capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
<b>Multi-RAT capability</b>				
Support of GSM	MP		Boolean	
Support of multi-carrier	MP		Boolean	
Multi-mode capability	MP		Enumerated (TDD, FDD, FDD/TDD)	



10.3.3.42 UE radio access capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ICS version	MP		Enumerated(R99)	Indicates the release version of [42]-2 (Implementation Conformance Statement (ICS) proforma specification) that is applicable for the UE.
PDCP capability	MP		PDCP capability 10.3.3.24	
RLC capability	MP		RLC capability 10.3.3.34	
Transport channel capability	MP		Transport channel capability 10.3.3.40	
RF capability FDD	OP		RF capability FDD 10.3.3.33	
RF Capability TDD	OP		RF capability TDD 10.3.3.33b	
Physical channel capability	MP		Physical channel capability 10.3.3.25	
UE multi-mode/multi-RAT capability	MP		UE multi-mode/multi-RAT capability 10.3.3.41	
Security capability	MP		Security capability 10.3.3.37	
UE positioning capability	MP		UE positioning capability 10.3.3.45	
Measurement capability	CH- <i>fdd_req_sup</i>		Measurement capability 10.3.3.21	

Condition	Explanation
<i>fdd_req_sup</i>	Presence of the IE is mandatory if IE Multi-mode capability has the value "FDD" or "FDD/TDD" and a FDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

## 10.3.3.42a UE radio access capability extension

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Frequency band specific capability list	MP	1 to <maxFreqbandsFDD>		
>Frequency band	MP		Enumerated(FDD2100, FDD1900)	At least one spare value is needed
>RF capability FDD extension	MD		RF capability FDD extension 10.3.3.33a	the default values are the same values as in the immediately preceding IE "RF capability FDD extension"; the first occurrence is MP
>Measurement capability extension	MP		Measurement capability extension 10.3.3.21a	

## 10.3.3.43 UE Timers and Constants in connected mode

This information element specifies timer- and constants values used by the UE in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T301	MD		Integer(100, 200 .. 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 2000. This IE should not be used by the UE in this release of the protocol.
N301	MD		Integer(0..7)	Default value is 2. This IE should not be used by the UE in this release of the protocol.
T302	MD		Integer(100, 200... 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 4000.
N302	MD		Integer(0..7)	Default value is 3.
T304	MD		Integer(100, 200, 400, 1000, 2000)	Value in milliseconds. Default value is 2000. At least one spare value is needed. Note 1.
N304	MD		Integer(0..7)	Default value is 2. Note 1.
T305	MD		Integer(5, 10, 30, 60, 120, 360, 720, infinity)	Value in minutes. Default value is 30. Infinity means no update
T307	MD		Integer(5, 10, 15, 20, 30, 40, 50)	Value in seconds. Default value is 30.
T308	MD		Integer(40, 80, 160, 320)	Value in milliseconds. Default value is 160. Note 1.
T309	MD		Integer(1...8)	Value in seconds. Default value is 5. Note 1.
T310	MD		Integer(40 .. 320 by step of 40)	Value in milliseconds. Default value is 160. Note 1.
N310	MD		Integer(0 .. 7)	Default value is 4. Note 1.
T311	MD		Integer(250 .. 2000 by step of 250)	Value in milliseconds. Default value is 2000. Note 1.
T312	MD		Integer (0..15)	Value in seconds. Default value is 1.
N312	MD		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1.
T313	MD		Integer (0..15)	Value in seconds. Default value is 3. Note 1.
N313	MD		Integer (1, 2, 4, 10, 20, 50, 100, 200)	Default value is 20. Note 1.
T314	MD		Integer(0, 2, 4, 6, 8, 12, 16, 20)	Value in seconds. Default value is 12. Note 1.
T315	MD		Integer	Value in seconds. Default

			(0,10, 30, 60, 180, 600, 1200, 1800)	value is 180. Note 1.
N315	MD		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1. Note 1.
T316	MD		Integer(0, 10, 20, 30, 40, 50, infinity)	Value in seconds. Default value is 30.
T317	MD		Integer (0,10, 30, 60, 180, 600, 1200, 1800)	Value in seconds Default value is 180.

NOTE 1: If the value of SIB1 changes, the UE shall re-read SIB1 and use the new value of the parameter, if modified.

#### 10.3.3.44 UE Timers and Constants in idle mode

This information element specifies timer- and constant values used by the UE in idle mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T300	MP		Integer(10 0, 200... 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 1000.
N300	MP		Integer(0.. 7)	Default value is 3.
T312	MP		Integer(0 .. 15)	Value in seconds. Default value is 1.
N312	MP		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1.

## 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

## 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(cha nge of URA, periodic URA update, re-entered service area)	At least one spare value needed.

## 10.3.3.47 U-RNTI

The U-RNTI (UTRAN Radio Network Temporary Identity) is allocated to an UE having a RRC connection and identifies the UE within UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SRNC identity	MP		bit string(12)	
S-RNTI	MP		bit string(20)	

## 10.3.3.48 U-RNTI Short

The U-RNTI (UTRAN Radio Network Temporary Identity) is allocated to an UE having a RRC connection and identifies the UE within UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SRNC identity	MP		bit string(12)	
S-RNTI 2	MP		bit string(10)	

### 10.3.3.49 UTRAN DRX cycle length coefficient

A coefficient in the formula to count the paging occasions to be used by a specific UE (specified in [4]).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DRX cycle length coefficient	MP		Integer(3..9)	Refers to 'k' in the formula as specified in [4], Discontinuous reception

### 10.3.3.50 Wait time

Wait time defines the time period the UE has to wait before repeating the rejected procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Wait time	MP		Integer(0..15)	Wait time in seconds The value 0 indicates that repetition is not allowed.

## 10.3.4 Radio Bearer Information elements

### 10.3.4.0 Default configuration identity

This information element identifies a default radio parameter configuration.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Default configuration identity	MP		Integer (0..9)	The corresponding default configurations are specified in 13.7

### 10.3.4.1 Downlink RLC STATUS info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timer_Status_Prohibit	OP		Integer(10..50 by step of 10, 550..1000 by step of 50)	Minimum time in ms between STATUS reports
Timer_EPC	OP		Integer(50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 300, 400, 500, 700, 900)	Time in ms
Missing PDU Indicator	MP		Boolean	Value true indicates that UE should send a STATUS report for each missing PDU that is detected
Timer_STATUS_periodic	OP		Integer(100, 200, 300, 400, 500, 750, 1000, 2000)	Time in milliseconds

## 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- <i>LosslessCriteria</i>		Boolean	TRUE means support
Max PDCP SN window size	CV- <i>Lossless</i>		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 <i>algorithm type</i> >>RFC2507	MP			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
<i>LosslessCriteria</i>	This IE is <u>mandatory</u> present only if the IE "RLC mode" is "Acknowledged" and the IE "In-sequence delivery" is "True" <u>and not needed otherwise</u> .
<i>Lossless</i>	This IE <del>shall be</del> <u>is mandatory</u> present if the IE "Support for lossless SRNS relocation" Is TRUE, otherwise it <del>shall be absent</del> <u>is not needed</u> .

## 10.3.4.3 PDCP SN info

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Receive PDCP sequence number	MP		Integer(0..65535)	The PDCP sequence number, which the sender of the message is expecting next to be received.

## 10.3.4.4 Polling info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timer_poll_prohibit	OP		Integer(10..550 by step of 10, 600..1000 by step of 50)	Minimum time between polls in ms
Timer_poll	OP		Integer(10..550 by step of 10, 600..1000 by step of 50)	Time in ms.
Poll_PDU	OP		Integer(1,2,4,8,16,32,64,128)	Number of PDUs, interval between pollings
Poll_SDU	OP		Integer(1,4,16,64)	Number of SDUs, interval between pollings
Last transmission PDU poll	MP		Boolean	TRUE indicates that poll is made at last PDU in transmission buffer
Last retransmission PDU poll	MP		Boolean	TRUE indicates that poll is made at last PDU in retransmission buffer
Poll_Window	OP		Integer(50,60,70,80,85,90,95,99)	Percentage of transmission window, threshold for polling
Timer_poll_periodic	OP		Integer(100, 200, 300, 400, 500, 750, 1000, 2000)	Time in milliseconds Timer for periodic polling.

## 10.3.4.5 Predefined configuration identity

This information element identifies a pre- defined radio parameter configuration.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Predefined radio configuration identity	MP		Integer (0..15)	

## 10.3.4.6 Predefined configuration value tag

This information element is used to identify different versions of a radio bearer configuration as may be used within one PLMN e.g. to support different UTRAN implementations.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Predefined configuration value tag	MP		Integer(0..15)	



### 10.3.4.7 Predefined RB configuration

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

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

### 10.3.4.8 RAB info

This IE contains information used to uniquely identify a radio access bearer.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB identity	MP		RAB identity 10.3.1.14	
CN domain identity	MP		CN domain identity 10.3.1.1	
NAS Synchronization Indicator	OP		NAS Synchronization indicator 10.3.4.12	
Re-establishment timer	MP		Re-establishment timer 10.3.3.30	

### 10.3.4.9 RAB info Post

This IE contains information used to uniquely identify a radio access bearer.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB identity	MP		RAB identity 10.3.1.14	
CN domain identity	MP		CN domain identity 10.3.1.1	
NAS Synchronization Indicator	OP		NAS Synchronization indicator 10.3.4.12	

#### 10.3.4.10 RAB information for setup

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB info	MP		RAB info 10.3.4.8	
RB information to setup list	MP	1 to <maxRBperRAB>		
>RB information to setup	MP		RB information to setup 10.3.4.20	

#### 10.3.4.11 RAB information to reconfigure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB identity	MP		RAB Identity 10.3.1.14	
CN domain identity	MP		CN domain identity 10.3.1.1	
NAS synchronization indicator	MP		NAS Synchronization info 10.3.4.12	

#### 10.3.4.12 NAS Synchronization indicator

A container for non-access stratum information to be transferred transparently through UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
NAS Synchronization indicator	MP		Bitstring(4)	The bits are numbered b1-b4, where b1 is the least significant bit.

#### 10.3.4.13 RB activation time info

This IE contains the time, in terms of RLC sequence numbers, when a certain configuration shall be activated, for a number of radio bearers.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Radio bearer activation time	MP	1 to <maxRB>		
>RB identity	MP		RB identity 10.3.4.16	
>RLC sequence number	MP		Integer (0..4095)	RLC SN [16] . Used for radio bearers mapped on RLC AM and UM

#### 10.3.4.14 RB COUNT-C MSB information

The MSB of the COUNT-C values of the radio bearer.

Information Element/Group name	Needed	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
COUNT-C-MSB-uplink	MP		Integer (0.. $2^{25}-1$ )	25 MSBs from COUNT-C associated to this RB
COUNT-C-MSB-downlink	MP		Integer (0.. $2^{25}-1$ )	25 MSBs from COUNT-C associated to this RB

#### 10.3.4.15 RB COUNT-C information

The COUNT-C values of the radio bearer.

Information Element/Group name	Needed	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
COUNT-C-uplink	MP		Integer (0.. $2^{32}-1$ )	
COUNT-C-downlink	MP		Integer (0.. $2^{32}-1$ )	

#### 10.3.4.16 RB identity

An identification number for the radio bearer affected by a certain message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		Integer(1..32)	Values 1-4 shall only be used for signalling radio bearers. The IE value minus one shall be used as BEARER in the ciphering algorithm.

#### 10.3.4.17 RB information to be affected

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
RB mapping info	MP		RB mapping info 10.3.4.21	

## 10.3.4.18 RB information to reconfigure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
PDCP info	OP		PDCP info 10.3.4.2	
PDCP SN info	OP		PDCP SN info 10.3.4.3	PDCP sequence number info from the network. Present only in case of lossless SRNS relocation.
RLC info	OP		RLC info 10.3.4.23	
RB mapping info	OP		RB mapping info 10.3.4.21	
RB stop/continue	OP		Enumerated( stop, continue)	

## 10.3.4.19 RB information to release

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	

## 10.3.4.20 RB information to setup

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
PDCP info	OP		PDCP info 10.3.4.2	
CHOICE <i>RLC info type</i>	MP			
>RLC info			RLC info 10.3.4.23	
>Same as RB			RB identity 10.3.4.16	Identity of RB with exactly the same RLC info IE values
RB mapping info	MP		RB mapping info 10.3.4.21	

NOTE This information element is included within IE "Predefined RB configuration"

## 10.3.4.21 RB mapping info

A multiplexing option for each possible transport channel this RB can be multiplexed on.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Information for each multiplexing option	MP	1 to <maxRBMuxOptions>		
>RLC logical channel mapping indicator	CV-UL-RLCLogicalChannels		Boolean	TRUE indicates that the first logical channel shall be used for data PDUs and the second logical channel shall be used for control PDUs. FALSE indicates that control and data PDUs can be sent on either of the two logical channels. This parameter is not used in this release and shall be set to TRUE.
>Number of uplink RLC logical channels	CV-UL-RLC info	1 to MaxLoCHperRLC		1 or 2 logical channels per RLC entity or radio bearer RLC [16]
>>Uplink transport channel type	MP		Enumerated(DCH,RACH, CPCH,USCH)	CPCH is FDD only USCH is TDD only
>>ULTransport channel identity	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	This is the ID of a DCH or USCH (TDD only) that this RB could be mapped onto.
>>Logical channel identity	OP		Integer(1..15)	This parameter is used to distinguish logical channels multiplexed by MAC on a transport channel.
>>CHOICE RLC size list	MP			The RLC sizes that are allowed for this logical channel For radio bearers mapped to RACH, "Explicit list" is the only valid choice. The UE shall regard all other choices as undefined IE values and handle these as specified in clause 9.
>>>All			Null	All RLC sizes listed in the <i>Transport Format Set</i> . 10.3.5.23
>>>Configured			Null	The RLC sizes configured for this logical channel in the <i>Transport Format Set</i> . 10.3.5.23 if present in this message or in the previously stored configuration otherwise
>>>Explicit List		1 to <maxTF>		Lists the RLC sizes that are valid for the logical channel.
>>>>RLC size index	MP		Integer(1..maxTF)	The integer number is a reference to the <i>RLC size</i> which arrived at that position in the <i>Transport Format Set</i> 10.3.5.23
>>MAC logical channel priority	MP		Integer(1..8)	This is priority between a user's different RBs (or logical channels). [15]
>Downlink RLC logical channel info	CV-DL-RLC info			
>>Number of downlink RLC logical channels	MD	1 to MaxLoCHperRLC		1 or 2 logical channels per RLC entity or radio bearer RLC [16] Default value is that parameter values for DL are exactly the same as for corresponding UL

				logical channel. In case two multiplexing options are specified for the UL, the first options shall be used as default for the DL. As regards to the IE "Channel type", rule is specified in 8.6.4.8.
>>>Downlink transport channel type	MP		Enumerated(DCH,FACH, DSCH,DCH+DSCH)	
>>>DL DCH Transport channel identity	CV-DL-DCH		Transport channel identity 10.3.5.18	
>>>DL DSCH Transport channel identity	CV-DL-DSCH		Transport channel identity 10.3.5.18	
>>>Logical channel identity	OP		Integer(1..15)	16 is reserved

Condition	Explanation
UL-RLC info	If "CHOICE <i>Uplink RLC mode</i> " in IE "RLC info" is present this IE is <u>mandatory present</u> . Otherwise the IE is not needed.
DL-RLC info	If "CHOICE <i>Downlink RLC mode</i> " in IE "RLC info" is present this IE is <u>mandatory present</u> MP. Otherwise the IE is not needed.
UL-RLCLogicalChannels	If "Number of uplink RLC logical channels" in IE "RB mapping info" is 2, then this IE is <u>mandatory present</u> present. Otherwise this IE is not needed.
UL-DCH/USCH	If IE "Uplink transport channel type" is equal to "DCH" or "USCH" (TDD only) this IE is <u>mandatory present</u> MP. Otherwise the IE is not needed.
DL-DCH	If IE "Downlink transport channel type" is equal to "DCH" or "DCH+DSCH" this IE is <u>mandatory present</u> MP. Otherwise the IE is not needed.
DL-DSCH	If IE "Downlink transport channel type" is equal to "DSCH" or "DCH+DSCH" this IE is <u>mandatory present</u> MP. Otherwise the IE is not needed.

10.3.4.22 RB with PDCP information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
PDCP SN info	MP		PDCP SN info 10.3.4.3	PDCP sequence number info from the sender of the message for lossless SRNS relocation.

## 10.3.4.23 RLC info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Uplink RLC mode</i>	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used.
>AM RLC				
>>Transmission RLC discard	MP		Transmission RLC discard 10.3.4.25	
>>Transmission window size	MP		Integer(1,8,16,32,64,128,256,512,768,1024,1536,2047,2560,3072,3584,4095)	Maximum number of RLC PUs sent without getting them acknowledged. This parameter is needed if acknowledged mode is used. UE shall also assume that the UTRAN receiver window is equal to this value.
>>Timer_RST	MP		Integer(50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 700, 800, 900, 1000)	Elapsed time in milliseconds. It is used to trigger the retransmission of RESET PDU.
>>Max_RST	MP		Integer(1, 4, 6, 8, 12, 16, 24, 32)	The maximum number of retransmission of RESET PDU
>>Polling info	OP		Polling info 10.3.4.4	
>UM RLC				
>>Transmission RLC discard	OP		Transmission RLC discard 10.3.4.25	
>TM RLC				
>>Transmission RLC discard	OP		Transmission RLC discard 10.3.4.25	
>>Segmentation indication	MP		Boolean	TRUE indicates that segmentation is performed.
CHOICE <i>Downlink RLC mode</i>	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used
>AM RLC				
>>In-sequence delivery	MP		Boolean	TRUE indicates that RLC shall preserve the order of higher layer PDUs when these are delivered. FALSE indicates that receiving RLC entity could allow SDUs to be delivered to the higher layer in different order than submitted to RLC sublayer at the transmitting side.
>>Receiving window size	MP		Integer(1,8,16,32,64,128,256,512,768,1024,1536,2047,2560,3072,3584,4095)	Maximum number of RLC PUs allowed to be received. This parameter is needed if acknowledged mode is used. UE shall also assume that the UTRAN transmitter window is equal to this value
>>Downlink RLC status Info	MP		Downlink RLC status info 10.3.4.1	
>UM RLC				(No data)
>TM RLC				

>>Segmentation indication	MP		Boolean	TRUE indicates that segmentation is performed.
---------------------------	----	--	---------	--

NOTE This information element is included within IE "Predefined RB configuration"

### 10.3.4.24 Signalling RB information to setup

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MD		RB identity 10.3.4.16	Default value is specified in subclause 8.6.4.1
CHOICE <i>RLC info type</i>	MP			
>RLC info			RLC info 10.3.4.23	
>Same as RB			RB identity 10.3.4.16	Identity of RB with exactly the same RLC info IE values
RB mapping info	MP		RB mapping info 10.3.4.21	

NOTE This information element is included within IE "Predefined RB configuration"



## 10.3.4.25 Transmission RLC Discard

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>SDU Discard Mode</i>	MP			Different modes for discharge the RLC buffer on the transmitter side; "Timer based with explicit signalling", "Timer based without explicit signalling", "Discard after Max_DAT retransmissions" or "No_discard". For unacknowledged mode and transparent mode, only Timer based without explicit signalling is applicable. If "No_discard" is used, reset procedure shall be done after Max_DAT retransmissions
>Timer based explicit				
>>Timer_MRW	MP		Integer(50,60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 300, 400, 500, 700, 900)	Elapsed time in milliseconds. It is used to trigger the retransmission of a STATUS PDU containing an MRW SUFI field
>>Timer_discard	MP		Integer(100, 250, 500, 750, 1000, 1250, 1500, 1750, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 7500)	Elapsed time in milliseconds before a SDU is discarded.
>>MaxMRW	MP		Integer(1, 4, 6, 8, 12, 16, 24, 32)	It is the maximum value for the number of retransmissions of a MRW command
>Timer based no explicit				
>>Timer_discard	MP		Integer(10,20,30,40,50,60,70,80,90,100)	Elapsed time in milliseconds before a SDU is discarded.
>Max DAT retransmissions				
>>Max_DAT	MP		Integer(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40)	Number of retransmissions of a PDU before a SDU is discarded.
>>Timer_MRW	MP		Integer(50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 300, 400, 500, 700, 900)	Elapsed time in milliseconds. It is used to trigger the retransmission of a STATUS PDU containing an MRW SUFI field
>>MaxMRW	MP		Integer(1, 4, 6, 8, 12, 16, 24, 32)	It is the maximum value for the number of retransmissions of a MRW command
>No discard				
>>Max_DAT	MP		Integer(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30,	Number of retransmissions of a PDU before the RLC entity is reset.

			35, 40)	
--	--	--	---------	--

<b>CHOICE SDU Discard Mode</b>	<b>Condition under which the given SDU Discard Mode is chosen</b>
Timer based explicit	If the modes for discharge of the RLC buffer on the transmitter side is "Timer based with explicit signalling"
Timer based no explicit	If the modes for discharge of the RLC buffer on the transmitter side is "Timer based without explicit signalling" For unacknowledged mode, only Timer based without explicit signalling is applicable.
Max DAT retransmissions	If the modes for discharge of the RLC buffer on the transmitter side is "Discard after Max_DAT retransmissions"
No discard	If the modes for discharge the of RLC buffer on the transmitter side is "Reset procedure shall be done after Max_DAT retransmissions"

### 10.3.5 Transport CH Information elements

#### 10.3.5.1 Added or Reconfigured DL TrCH information

<b>Information Element/Group name</b>	<b>Need</b>	<b>Multi</b>	<b>Type and reference</b>	<b>Semantics description</b>
Downlink transport channel type	MP		Enumerated(DCH,DSCH)	
DL Transport channel identity	MP		Transport channel identity 10.3.5.18	
<b>CHOICE DL parameters</b>				
>Explicit				
>>TFS	MP		Transport Format Set 10.3.5.23	
>SameAsUL				
>>Uplink transport channel type	MP		Enumerated(DCH,USCH)	USCH is TDD only
>>UL TrCH identity	MP		Transport channel identity 10.3.5.18	Same TFS applies as specified for indicated UL TrCH
DCH quality target	OP		Quality target 10.3.5.10	
Transparent mode signalling info	CV- MessageType		Transparent mode signalling info 10.3.5.17	This IE is not used in RB RELEASE message nor RB RECONFIGURATION message

<b>Condition</b>	<b>Explanation</b>
MessageType	This IE is <del>absent</del> <u>not needed</u> in Radio Bearer Release message and Radio Bearer Reconfiguration message. Otherwise it is <del>OPTIONAL</del> <u>optional</u> .

## 10.3.5.2 Added or Reconfigured UL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink transport channel type	MP		Enumerated(DCH,USCH)	USCH is TDD only
UL Transport channel identity	MP		Transport channel identity 10.3.5.18	
TFS	MP		Transport Format Set 10.3.5.23	

NOTE This information element is included within IE "Predefined RB configuration"

## 10.3.5.3 CPCH set ID

NOTE: Only for FDD.

This information element indicates that this transport channel may use any of the Physical CPCH channels defined in the CPCH set info, which contains the same CPCH set ID. The CPCH set ID associates the transport channel with a set of PCPCH channels defined in a CPCH set info IE and a set of CPCH persistency values. The CPCH set info IE(s) and the CPCH persistency values IE(s) each include the CPCH set ID and are part of the SYSTEM INFORMATION message

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH set ID	MP		Integer(1...maxCPCHsets)	Identifier for CPCH set info and CPCH persistency value messages

## 10.3.5.4 Deleted DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink transport channel type	MP		Enumerated(DCH,DSCH)	
DL Transport channel identity	MP		Transport channel identity 10.3.5.18	

## 10.3.5.5 Deleted UL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink transport channel type	MP		Enumerated(DCH,USCH)	USCH is TDD only
UL Transport channel identity	MP		Transport channel identity 10.3.5.18	

## 10.3.5.6 DL Transport channel information common for all transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SCCPCH TFCS	OP		Transport Format Combination Set 10.3.5.20	This IE should be absent within IE "Predefined RB configuration"
CHOICE <i>mode</i>	MP			Although this IE is not always required, need is MP to align with ASN.1
>FDD				
>>CHOICE <i>DL parameters</i>	OP			
>>>Explicit				
>>>>DL DCH TFCS	MP		Transport Format Combination Set 10.3.5.20	Although this IE is not always required, need is MP to align with ASN.1
>>>SameAsUL				(no data)
>TDD				
>>Individual DL CCTrCH information	OP	1 to <maxCCTrCH>		
>>>DL TFCS Identity	MP		Transport format combination set identity 10.3.5.21	Identifies a special CCTrCH for shared or dedicated channels.
>>>CHOICE <i>DL parameters</i>	MP			
>>>>Independent				
>>>>>DL TFCS	MP		Transport format combination set 10.3.5.20	
>>>>SameAsUL				
>>>>>UL DCH TFCS Identity	MP		Transport format combination set identity 10.3.5.21	Same TFCS applies as specified for the indicated UL DCH TFCS identity except for information applicable for UL only

NOTE This information element is included within IE "Predefined TrCh configuration"

## 10.3.5.7 DRAC Static Information

NOTE: Only for FDD.

Contains static parameters used by the DRAC procedure. Meaning and use is described in subclause 14.8.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission Time Validity	MP		Integer(1..256)	number of frames
Time duration before retry	MP		Integer(1..256)	number of frames
DRAC Class Identity	MP		Integer(1..maxDRACclasses)	Indicates the class of DRAC parameters to use in SIB10 message

10.3.5.8 Power Offset Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Gain Factors</i>	MP			
>Signalled Gain Factors				
>>CHOICE <i>mode</i>				
>>>FDD				
>>>>Gain Factor $\beta_c$	MP		Integer (0.. 15)	For UL DPCCH or control part of PRACH or PCPCH
>>>TDD				(no data)
>>Gain Factor $\beta_d$	MP		Integer (0..15)	For UL DPDCH or data part of PRACH or PCPCH in FDD and all uplink channels in TDD
>>Reference TFC ID	OP		Integer (0..3)	If this TFC is a reference TFC, indicates the reference ID.
>Computed Gain Factors				
>>Reference TFC ID	MP		Integer (0.. 3)	Indicates the reference TFC Id of the TFC to be used to calculate the gain factors for this TFC. In case of using computed gain factors, at least one signalled gain factor is necessary for reference.
CHOICE <i>mode</i>	MP			
>FDD				
>>Power offset P <sub>p-m</sub>	OP		Integer(-5..10)	In dB. Power offset between the last transmitted preamble and the control part of the message (added to the preamble power to receive the power of the message control part ) Needed only for PRACH
>TDD				(no data)

CHOICE <i>Gain Factors</i>	Condition under which the way to signal the <i>Gain Factors</i> is chosen
<i>Signalled Gain Factors</i>	The values for gain factors $\beta_c$ (only in FDD mode) and $\beta_d$ are signalled directly for a TFC.
<i>Computed Gain Factors</i>	The gain factors $\beta_c$ (only in FDD mode) and $\beta_d$ are computed for a TFC, based on the signalled settings for the associated reference TFC.

10.3.5.9 Predefined TrCH configuration

This information element concerns a pre- defined configuration of transport channel parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.24	
<b>Added or Reconfigured TrCH information</b>				
Added or Reconfigured UL TrCH information	MP	1 to <maxTrCH preconf>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.6	
<b>Downlink transport channels</b>				
Added or Reconfigured DL TrCH information	MP	1 to <maxTrCH preconf>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	

### 10.3.5.10 Quality Target

Information Element/Group name	Need	Multi	Type and reference	Semantics description
BLER Quality value	MP		Real(-6.3 ..0 by step of 0.1)	Signalled value is Log10(Transport channel BLER quality target)

### 10.3.5.11 Semi-static Transport Format Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission time interval	MP		Integer(10, 20, 40, 80, dynamic)	In ms. The value dynamic is only used in TDD mode
Type of channel coding	MP		Enumerated(No coding, Convolutional, Turbo)	
Coding Rate	CV-Coding		Enumerated(1/2, 1/3)	
Rate matching attribute	MP		Integer(1..hi RM)	
CRC size	MP		Integer(0, 8, 12, 16, 24)	in bits

Condition	Explanation
Coding	This IE is <u>only mandatory</u> present if IE "Type of channel coding" is "Convolutional" <u>and not needed otherwise</u>

### 10.3.5.12 TFCI Field 2 Information

This IE is used for signalling the mapping between TFCI (field 2) values and the corresponding TFC.

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE <i>Signalling method</i>	MP			
>TFCI range				
>>TFCI(field 2) range	MP	1 to <maxPDS CH-TFCIgroup s>		
>>>Max TFCI(field2) value	MP		Integer(1..10 23)	This is the Maximum value in the range of TFCI(field2) values for which the specified CTFC(field2) applies
>>>TFCS Information for DSCH (TFCI range method)	MP		TFCS Information for DSCH (TFCI range method) 10.3.5.14	
>Explicit				
>>TFCS explicit configuration	MP		TFCS explicit configuration 10.3.5.13	

## 10.3.5.13 TFCS Explicit Configuration

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE <i>TFCS representation</i>	MP			
>Complete reconfiguration				
>>TFCS complete reconfiguration information	MP		TFCS Reconfiguration/Addition information 10.3.5.15	
>Addition				
>>TFCS addition information	MP		TFCS Reconfiguration/Addition information 10.3.5.15	
>Removal				
>>TFCS removal information	MP		TFCS Removal Information 10.3.5.16	
>Replace				
>>TFCS removal information	MP		TFCS Removal Information 10.3.5.16	
>>TFCS addition information	MP		TFCS Reconfiguration/Addition information 10.3.5.15	

## 10.3.5.14 TFCS Information for DSCH (TFCl range method)

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE <i>CTFC Size</i>	MP			
>2 bit CTFC				
>>2bit CTFC	MP		Integer(0..3)	
>4 bit CTFC				
>>4bit CTFC	MP		Integer(0..15)	
>6 bit CTFC				
>>6 bit CTFC	MP		Integer(0..63)	
>8 bit CTFC				
>>8 bit CTFC	MP		Integer(0..255)	
>12 bit CTFC				
>>12 bit CTFC	MP		Integer(0..4095)	
>16 bit CTFC				
>>16 bit CTFC	MP		Integer(0..65535)	
>24 bit CTFC				
>>24 bit CTFC	MP		Integer(0..16777215)	

## 10.3.5.15 TFCS Reconfiguration/Addition Information



Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE CTFC Size	MP			
>2 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>2bit CTFC	MP		Integer(0..3)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>4 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>4bit CTFC	MP		Integer(0..15)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>6 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>6 bit CTFC	MP		Integer(0..63)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>8 bit CTFC				
>>CTFC information	MP	1 to <MaxTFC>		
>>>8 bit CTFC	MP		Integer(0..255)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>12 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>12 bit CTFC	MP		Integer(0..4095)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>16 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>16 bit CTFC	MP		Integer(0..65535)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>24 bit CTFC				
>>CTFC information	MP	1 to <MaxTFC>		
>>>24 bit CTFC	MP		Integer(0..16777215)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.

## 10.3.5.16 TFCS Removal Information

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Removal TFCI information	MP	1 to <maxTFC>		
>TFCI	MP		Transport Format Combination (TFC) 10.3.5.19	In TDD 0 is a reserved value

## 10.3.5.17 Transparent mode signalling info

Information Element	Need	Multi	Type and reference	Semantics description
Type of message	MP		Enumerated (TRANSPORT FORMAT COMBINATION CONTROL)	Indicates which type of message sent on the transparent mode signalling DCCH
CHOICE <i>Transparent signalling mode</i>	MP			
>Mode 1				(no data)
>Mode 2				
>>Controlled transport channels list	MP	1 to <maxTrCH>		The transport channels that are effected by the rate control commands sent on this transparent mode DCCH
>>>UL Controlled transport channels	MP		Transport channel identity, 10.3.5.18	transport channel type = DCH

## 10.3.5.18 Transport channel identity

This information element is used to distinguish transport channels. Transport channels of different type (RACH, CPCH, USCH, FACH/PCH, DSCH or DCH) have separate series of identities. This also holds for uplink and downlink transport channel identities (i.e. for DCH). Depending on in which context a transport channel identity  $n$  that is sent, it will have different meaning

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport channel identity	MP		Integer(1..32)	

## 10.3.5.19 Transport Format Combination (TFC)

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport format combination	MP		Integer (0..1023)	

## 10.3.5.20 Transport Format Combination Set

Indicates the allowed combinations of already defined Transport formats and the mapping between these allowed TFCs and the corresponding TFCI values.

For TDD, different coded composite transport channels have independent transport format combination sets and thus independent TFCI values.

For FDD, Where the UE is assigned access to one or more DSCH transport channels, a TFCI(field2) is used to signal the transport format combination for the DSCH. The following two cases exist:

- Case 1:  
Using one TFCI-word on the physical layer. A logical split determines the available number of transport format combinations for DCH and DSCH.
- Case 2:  
Using split TFCI on the physical layer. Two TFCI-words, each having a static length of five bits, are used.

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE <i>TFCI signalling</i>	MP			'Normal' : meaning no split in the TFCI field (either 'Logical' or 'Hard') 'Split' : meaning there is a split in the TFCI field (either 'Logical' or 'Hard'). This value is only valid for FDD downlink when using DSCH.
>Normal				
>>TFCI Field 1 Information	MP		TFCS explicit Configuration 10.3.5.13	
>Split				
>>Split type	OP		Enumerated ('Hard', 'Logical')	'Hard' : meaning that TFCI (field 1) and TFCI (field 2) are each 5 bits long and each field is block coded separately. 'Logical' : meaning that on the physical layer TFCI (field 1) and TFCI (field 2) are concatenated, field 1 taking the most significant bits and field 2 taking the least significant bits). The whole is then encoded with a single block code.
>>Length of TFCI(field2)	OP		Integer (1..10)	This IE indicates the length measured in number of bits of TFCI(field2)
>>TFCI Field 1 Information	OP		TFCS explicit Configuration 10.3.5.13	
>>TFCI Field 2 Information	OP		TFCI field 2 information 10.3.5.12	

CHOICE <i>TFCI signalling</i>	Condition under which <i>TFCI signalling type</i> is chosen
Normal	It is chosen when no split in the TFCI field.
Split	It is chosen when split in the TFCI field. This value is only valid for FDD downlink when using DSCH.

### 10.3.5.21 Transport Format Combination Set Identity

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Integer (1..8)	Indicates the identity of every TFCS within a UE. Default value is 1.
Shared Channel Indicator	MP		Boolean	TRUE indicates the use of shared channels. Default is false.

### 10.3.5.22 Transport Format Combination Subset

Indicates which Transport format combinations in the already defined Transport format combination set are allowed.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>CHOICE Subset representation</b>	MP			
>Minimum allowed Transport format combination index			Transport format combination 10.3.5.19	
>Allowed transport format combination list		1 to <maxTFC>		
>>Allowed transport format combination	MP		Transport format combination 10.3.5.19	
>Non-allowed transport format combination list		1 to <maxTFC>		
>>Non-allowed transport format combination	MP		Transport format combination 10.3.5.19	
>Restricted TrCH information		1 to <maxTrCH>		
>>Uplink transport channel type	MP		Enumerated(DCH, USCH)	USCH is TDD only
>>Restricted UL TrCH identity	MP		Transport channel identity 10.3.5.18	
>>>Allowed TFIs	OP	1 to <maxTF>		
>>>>Allowed TFI	MP		Integer(0..31)	
>Full transport format combination set				(No data)

## 10.3.5.23 Transport Format Set

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Transport channel type</i> >Dedicated transport channels	MP			The transport channel that is configured with this TFS is of type DCH
>>Dynamic Transport Format Information	MP	1 to <maxTF>		
>>>RLC Size	MP		Integer(0..4992)	Unit is bits
>>>Number of TBs and TTI List	MP	1 to <maxTF>		Present for every valid number of TB's (and TTI) for this RLC Size.
>>>>Transmission Time Interval	CV- <i>dynamicTTI</i>		Integer(10,20,40,80)	Unit is ms.
>>>>Number of Transport blocks	MP		Integer(0..512)	
>>>CHOICE <i>Logical Channel List</i>	MP			The logical channels that are allowed to use this RLC Size
>>>>ALL			Null	All logical channels mapped to this transport channel.
>>>>Configured			Null	The logical channels configured to use this RLC size in the <i>RB mapping info</i> . 10.3.4.21 if present in this message or in the previously stored configuration otherwise
>>>>Explicit List		1 to 15		Lists the logical channels that are allowed to use this RLC size.
>>>>>RB Identity	MP		RB identity 10.3.4.16	
>>>>>LogicalChannel	CH-UL- <i>RLCLogicalChannels</i>		Integer(0..1)	Indicates the relevant UL logical channel for this RB. "0" corresponds to the first, "1" corresponds to the second UL logical channel configured for this RB in the IE "RB mapping info".
>>Semi-static Transport Format Information	MP		Semi-static Transport Format Information 10.3.5.11	
>Common transport channels				The transport channel that is configured with this TFS is of a type not equal to DCH
>>Dynamic Transport Format Information	MP	1 to <maxTF>		Note
>>>RLC Size	MP		Integer(0..4992)	Unit is bits
>>>Number of TBs and TTI List	MP	1 to <maxTF>		Present for every valid number of TB's (and TTI) for this RLC Size.
>>>>Number of Transport blocks	MP		Integer(0..512)	
>>>>CHOICE <i>mode</i>	MP			
>>>>>FDD				(no data)
>>>>>TDD				
>>>>>>Transmission Time Interval	CV- <i>dynamicTTI</i>		Integer(10,20,40,80)	Unit is ms.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
	/			
>>>CHOICE <i>Logical Channel List</i>	MP			The logical channels that are allowed to use this RLC Size. For radio bearers mapped to RACH, the UE shall regard "Explicit list" as an undefined IE value and handle these as specified in clause 9.
>>>>ALL			Null	All logical channels mapped to this transport channel.
>>>>Configured			Null	The logical channels configured to use this RLC size in the <i>RB mapping info</i> . 10.3.4.21 if present in this message or in the previously stored configuration otherwise
>>>>Explicit List		1 to 15		Lists the logical channels that are allowed to use this RLC size.
>>>>RB Identity	MP		RB identity 10.3.4.16	
>>>>LogicalChannel	<i>CV-UL-RLCLogicalChannels</i>		Integer(0..1)	Indicates the relevant UL logical channel for this RB. "0" corresponds to the first, "1" corresponds to the second UL logical channel configured for this RB in the IE "RB mapping info".
>>Semi-static Transport Format Information	MP		Semi-static Transport Format Information 10.3.5.11	

Condition	Explanation
<i>dynamicTTI</i>	This IE is <del>included</del> <u>mandatory present</u> if dynamic TTI usage is indicated in IE Transmission Time Interval in Semi-static Transport Format Information. Otherwise it is not needed.
<i>UL-RLCLogicalChannels</i>	If "Number of uplink RLC logical channels" in IE "RB mapping info" in this message is 2 or the IE "RB mapping info" is not present in this message and 2 UL logical channels are configured for this RB, then this IE is <u>mandatory present</u> . Otherwise this IE is not needed.

NOTE: The parameter "rate matching attribute" is in line with the RAN WG1 specifications. However, it is not currently in line with the description in [34].

## 10.3.5.24 UL Transport channel information common for all transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PRACH TFCS	OP		Transport format combination set 10.3.5.20	This IE should not be included in this version of the protocol.
CHOICE <i>mode</i> >FDD	OP			
>>TFC subset	MD		Transport Format Combination Subset 10.3.5.22	Default value is the complete existing set of transport format combinations
>>UL DCH TFCS	MP		Transport formation combination set 10.3.5.20	
>TDD				
>>Individual UL CCTrCH information	OP	1 to <maxCCTrCH>		
>>>UL TFCS Identity	MP		Transport format combination set identity 10.3.5.21	Identifies a special CCTrCH for shared or dedicated channels.
>>>UL TFCS	MP		Transport format combination set 10.3.5.20	
>>>TFC subset	MD		Transport Format Combination Subset 10.3.5.22	Default value is the complete existing set of transport format combinations

NOTE This information element is included within IE "Predefined TrCh configuration"

## 10.3.6 Physical CH Information elements

## 10.3.6.1 AC-to-ASC mapping

Information Element/Group name	Need	Multi	Type and reference	Semantics description
AC-to-ASC mapping table	MP	maxASCmap		
>AC-to-ASC mapping	MP		Integer(0..7)	Mapping of Access Classes to Access Service Classes (see subclause 8.5.13.)

## 10.3.6.2 AICH Info

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Channelisation code	MP		Integer(0..255)	SF is fixed and equal to 256
STTD indicator	MP		STTD Indicator 10.3.6.78	
AICH transmission timing	MP		Enumerated(0, 1)	See parameter AICH_Transmission_Timing in [26]

### 10.3.6.3 AICH Power offset

NOTE: Only for FDD.

This parameter is used to indicate the power level of AICH, AP-AICH and CD/CA-ICH channels. This is the power per transmitted Acquisition Indicator, AP Acquisition Indicator or CD/CA Indicator minus power of the Primary CPICH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
AICH Power offset	MP		Integer(-22..+5)	Offset in dB

### 10.3.6.4 Allocation period info

NOTE: Only for TDD.

Parameters used by UE to determine period of shared channel allocation.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Allocation Activation Time	MP		Integer(0..255)	Start the allocation period at the given CFN.
Allocation Duration	MP		Integer(1..256)	Total number of frames for the allocation period.

### 10.3.6.5 Alpha

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Alpha Value	MP		Enumerated(0, 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 1)	



## 10.3.6.6 ASC setting

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Available signature Start Index	MP		Integer(0..15)	
>>Available signature End Index	MP		Integer(0..15)	
>>Assigned Sub-Channel Number	MP		Bitstring(4)	This IE defines the subchannel assignment as specified in 8.6.6.29. The bits are numbered b0 to b3, where b0 is the least significant bit.
>TDD				
>>Available Channelisation codes indices	MD		Bitstring(8)	Each bit indicates availability of a channelisation code index, where the channelisation code indices are numbered "channelisation code index 0" to "channelisation code index 7". The value 1 of a bit indicates that the channelisation code index is available for the ASC this IE is associated to. The value 0 of a bit indicates that the channelisation code index is not available for the ASC this IE is associated to. Default is that all channelisation codes defined in PRACH Info are available.
>>CHOICE <i>subchannel size</i>	MP			
>>>Size1				
>>>>Available Subchannels	MP		null	Indicates that all Subchannels are available.
>>>>Size2				
>>>>Available Subchannels	MD		Bitstring (2)	NOTE 1
>>>>Size4				
>>>>Available Subchannels	MD		Bitstring (4)	NOTE 1
>>>>Size8				
>>>>Available Subchannels	MD		Bitstring (8)	NOTE 1

NOTE 1: Each bit indicates availability of a subchannel, where the subchannels are numbered subchannel 0, subchannel 1 etc. The value 1 of a bit indicates that the subchannel is available for the ASC this IE is associated with. The value 0 of a bit indicates that the subchannel is not available for the ASC this IE is associated with. Default value of the IE is that all subchannels within the size are available for the ASC this IE is associated with.

## 10.3.6.7 Block STTD indicator

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Block STTD indicator	MP		Boolean	TRUE indicates that block STTD is used

## 10.3.6.8 CCTrCH power control info

Parameters used by UE to set the SIR target value for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
TFCS Identity	OP		Transport Format Combination Set Identity 10.3.5.21	TFCS Identity of this CCTrCH. Default value is 1.
Uplink DPCH power control info	MP		Uplink DPCH power control info 10.3.6.91	

## 10.3.6.8a Cell and Channel Identity info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Burst type	MP		Enumerated (Type1, Type2)	Identifies the channel in combination with the Midamble shift and slot number
Midamble Shift	MP		Integer (0...15)	
Time Slot	OP		Timeslot number 10.3.6.84	This IE is present only if no IPDL scheme is configured in the reference cell. Otherwise the slot is defined by the IPDL configuration.
Cell parameters ID	MP		Cell parameters ID 10.3.6.9	Identifies the cell

## 10.3.6.9 Cell parameters Id

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Cell parameter Id	MP		Integer(0..127)	

## 10.3.6.10 Common timeslot info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
2 <sup>nd</sup> interleaving mode	MD		Enumerated( Frame, Timeslot)	Frame timeslot related interleaving. Default value is "Frame"
TFCI coding	MD		Integer(4,8,16,32)	Describes the way the TFCI bits are coded in bits. Defaults is no TFCI bit: 4 means 1 TFCI bit is coded with 4 bits. 8 means 2 TFCI bits are coded with 8 bits. 16 means 3 – 5 TFCI bits are coded with 16 bits. 32 means 6 – 10 TFCI bits coded with 32 bits.
Puncturing limit	MP		Real(0.40..1.0 by step of 0.04)	
Repetition period	MD		Integer(1, 2,4,8,16,32,64)	Default is continuous allocation. Value 1 indicate continuous
Repetition length	MP		Integer(1..Repetition period – 1 )	Note that this is empty if repetition period is set to 1

## 10.3.6.11 Constant value

This constant value is used by the UE to calculate the initial output power on PRACH according to the Open loop power control procedure. In TDD constant values are used for open loop power control of PRACH, USCH and UL DPCH as defined in subclause 8.5.7.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Constant value	MP		Integer (-35..-10)	

## 10.3.6.12 CPCH persistence levels

NOTE: Only for FDD.

This IE is dynamic and is used by RNC for load balancing and congestion control. This is broadcast often in the system information message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH set ID	MP		Integer (1 .. <maxCPCHs ets>)	Identifier for CPCH set info.
Dynamic persistence level	MP	1 to <maxTF-CPCH>		
>Dynamic persistence level	MP		Dynamic persistence level 10.3.6.35	Persistence level for transport format.

### 10.3.6.13 CPCH set info

NOTE: Only for FDD.

This IE may be broadcast in the System Information message or assigned by SRNC. It is pseudo-static in a cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH set ID	MP		CPCH set ID 10.3.5.3	Indicates the ID number for a particular CPCH set allocated to a cell.
TFS	MP		Transport Format Set 10.3.5.23	Transport Format Set Information allocated to this CPCH set.
TFCS	MP		Transport Format Combination Set 10.3.5.20	Transport Format Set Information allocated to this CPCH set
AP preamble scrambling code	MP		Integer (0..79)	Preamble scrambling code for AP in UL
AP-AICH channelisation code	MP		Integer(0..255)	Channelisation code for AP-AICH in DL
CD preamble scrambling code	MP		Integer (0..79)	Preamble scrambling code for CD in UL
CD/CA-ICH channelisation code	MP		Integer (0..255)	Channelisation code for CD/CA-ICH in DL
Available CD access slot subchannel	CV- CDSigPresent	1 to <maxPCP CH-CDsubCh>		Lists the set of subchannels to be used for CD access preambles. Note: if not present, all subchannels are to be used without access delays.
>CD access slot subchannel	MP		Integer (0..11)	
Available CD signatures	OP	1 to <maxPCP CH-CDsig>		Signatures for CD preamble in UL. Note: if not present, all signatures are available for use.
>CD signatures	MP		Integer (0..15)	
DeltaPp-m	MP		Integer (-10..10)	In dB. Power offset between the transmitted CD preamble and UL DPCCH of the power control preamble or message part (added to the preamble power to calculate the power of the UL DPCCH)
UL DPCCH Slot Format	MP		Enumerated (0,1,2)	Slot format for UL DPCCH in power control preamble and in message part
N_start_message	MP		Integer (1..8)	Number of Frames for start of message indication
N_EOT	MP		Integer(0..7)	Actual number of appended EOT indicators is $T\_EOT = N\_TTI * \text{ceil}(N\_EOT/N\_TTI)$ , where $N\_TTI$ is the number of frames per TTI and "ceil" refers to rounding up to nearest integer.
Channel Assignment Active	OP		Boolean	When present, indicates that Node B send a CA message and VCAM mapping rule (14.11) shall be used.
CPCH status indication mode	MP		CPCH status indication mode 10.3.6.14	
PCPCH Channel Info.	MP	1 to <maxPCP CHs>		
>UL scrambling code	MP		Integer (0..79)	For PCPCH message part

>DL channelisation code	MP		Integer (0...511)	For DL DPCCH for PCPCH message part
>DL scrambling code	MD		Secondary Scrambling Code 10.3.6.74	Default is the same scrambling code as for the primary CPICH.
>PCP length	MP		Enumerated (0, 8)	Indicates length of power control preamble, 0slots (no preamble used) or 8 slots
>UCSM Info	CV-NCAA			
>>Minimum Spreading Factor	MP		Integer (4,8,16,32,64,128,256 )	The UE may use this PCPCH at any Spreading Factor equal to or greater than the indicated minimum Spreading Factor. The Spreading Factor for initial access is the minimum Spreading Factor.
>>NF_max	MP		Integer (1...64)	Maximum number of frames for PCPCH message part
>>>Channel request parameters for UCSM	MP			Required in UE channel selection mode.
>>>>Available AP signature	MP	1 to <maxPCP CH-APsig>		AP preamble signature codes for selection of this PCPCH channel.
>>>>>AP signature	MP		Integer (0..15)	
>>>>>Available AP access slot subchannel	OP	1 to <maxPCP CH-APsubCh>		Lists the set of subchannels to be used for AP access preambles in combination with the above AP signature(s). Note: if not present, all subchannels are to be used without access delays.
>>>>>>AP access slot subchannel	MP		Integer (0..11)	
VCAM info	CV-CAA			
>Available Minimum Spreading Factor	MP	1 to <maxPCP CH-SF>		
>>Minimum Spreading Factor	MP		Enumerated (4,8,16,32,64,128,256 )	
>>NF_max	MP		Integer (1..64)	Maximum number of frames for PCPCH message part
>>>Maximum available number of PCPCH	MP		Integer (1..64)	Maximum available number of PCPCH for the indicated Spreading Factor.
>>>>Available AP signatures	MP	1 to <maxPCP CH-APsig>		Signatures for AP preamble in UL.
>>>>>AP signature			Integer (0..15)	
>>>>>>Available AP sub-channel	OP	1 to <maxPCP CH-APsubCh>		AP sub-channels for the given AP signature in UL. Note: if not present, all subchannels are to be used without access delays.
>>>>>>>AP sub-channel	MP		Integer (0..11)	

Condition	Explanation
<i>CDSigPresent</i>	This IE <del>may be included</del> <u>is optional</u> if IE "Available CD signatures" is present <u>and not needed otherwise</u> .
<i>NCAA</i>	This IE is <del>included</del> <u>mandatory present</u> if IE "Channel Assignment Active" is not present <u>and not needed otherwise</u>
<i>CAA</i>	This IE is <del>included</del> <u>mandatory present</u> if IE ""Channel Assignment Active" is present. <u>and not needed otherwise</u>

### 10.3.6.14 CPCH Status Indication mode

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH Status Indication mode	MP		Enumerated (PA mode, PAMASF mode)	Defines the status information type broadcast on the CPCH Status Indication Channel (CSICH)

CPCH Status Indication mode defines the structure of the CSICH information that is broadcast by Node B on the CSICH channel. CSICH mode can take 2 values: PCPCH Availability (PA) mode and PCPCH Availability with Minimum Available Spreading Factor (PAMASF) mode. PAMASF mode is used when Channel Assignment is active. PA mode is used when Channel Assignment is not active (UE Channel Selection is active). [26] defines the structure of the CSICH information for both CSICH modes.

### 10.3.6.15 CSICH Power offset

NOTE: Only for FDD.

This is the power per transmitted CSICH Indicator minus power of the Primary CPICH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CSICH Power offset	MP		Integer(-10..+5)	Offset in dB, granularity of 1 dB

### 10.3.6.16 Default DPCH Offset Value

Indicates the default offset value within interleaving size at a resolution of 512chip (1/5 slot) in FDD and a resolution of one frame in TDD to offset CFN in the UE. This is used to distribute discontinuous transmission periods in time and also to distribute NodeB-RNC transmission traffics in time. Even though the CFN is offset by DOFF, the start timing of the interleaving will be the timing that "CFN mod (interleaving size)"=0 (e.g. interleaving size: 2,4,8) in both UE and SRNC.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>				
>FDD				
>>Default DPCH Offset Value (DOFF)	MP		Integer (0..306688 by step of 512)	Number of chips=. 0 to 599 time 512 chips, see [10].
>TDD				
>>Default DPCH Offset Value (DOFF)	MP		Integer(0..7)	Number of frames; See [10]

10.3.6.17 Downlink channelisation codes

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>codes representation</i>	MP			
>Consecutive codes				
>>First channelisation code	MP		Enumerated ( (16/1)...(16/16) )	The codes from First channelisation code to Last channelisation code shall be used in that order by the physical layer in this timeslot. If a TFCI exists in this timeslot, it is mapped in the First channelisation code.
>>Last channelisation code	MP		Enumerated ( (16/1)...(16/16) )	If this is the same as First channelisation code, only one code is used by the physical layer.
>Bitmap				
>>Channelisation codes bitmap	MP		Bitstring(16)	<b>Each bit indicates the availability of a channelisation code for SF16, where the channelisation codes are numbered as channelisation code 1 (SF16) to channelisation code 16 (SF16).</b> (For SF 16, a 1 in the bitmap means that the corresponding code is used, a 0 means that the corresponding code is not used.) If all bits are set to zero, SF 1 shall be used.



10.3.6.18 Downlink DPCH info common for all RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timing Indication	MP		Enumerated(Initialise, Maintain)	Note 1
CFN-targetSFN frame offset	CV- <i>TimInd</i>		Integer(0..255)	In frame
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	
CHOICE <i>mode</i>	MP			
>FDD				
>>Power offset $P_{Pilot-DPCH}$	MP		Integer(0..24)	Power offset equals $P_{Pilot} - P_{DPCH}$ , range 0..6 dB, in steps of 0.25 dB
>>>Downlink rate matching restriction information	OP		Downlink rate matching restriction information 10.3.6.31	If this IE is set to "absent", no Transport CH is restricted in TFI.
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	
>>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>>CHOICE <i>SF</i>	MP			
>>>>SF = 256				
>>>>>Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>>>>SF = 128				
>>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>>>>Otherwise				(no data). In ASN.1 choice "Otherwise" is not explicitly available as all values are available, it is implied by the use of any value other than 128 or 256.
>TDD				
>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info

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

Condition	Explanation
<i>TimInd</i>	This IE is OPTIONAL optional if the IE "Timing Indication" is set to "Initialise". Otherwise it is absentnot needed.

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

10.3.6.19 Downlink DPCH info common for all RL Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	

10.3.6.20 Downlink DPCH info common for all RL Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-Andpilot with "number of its for pilot bits" in ASN.1
>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>CHOICE <i>SF</i>	MP			
>>>SF = 256				
>>>>Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>>SF = 128				
>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>>Otherwise				(no data)
>TDD				
>>Common timeslot info	MP		Common Timeslot Info 10.3.6.10	

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

## 10.3.6.21 Downlink DPCH info for each RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>>DPCH frame offset	MP		Integer(0..381 44 by step of 256)	Offset (in number of chips) between the beginning of the P-CCPCH frame and the beginning of the DPCH frame This is called $\tau_{DPCH,n}$ in [26]
>>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73	
>>>DL channelisation code	MP	1 to <maxDPC H-DLchan>		For the purpose of physical channel mapping [27] the DPCHs are numbered, starting from DPCH number 1, according to the order that they are contained in this IE.
>>>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumbr with "code number" in ASN.1
>>>>Code number	MP		Integer(0..Spreading factor - 1)	
>>>>Scrambling code change	CH-SF/2		Enumerated (code change, no code change)	Indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'.
>>>TPC combination index	MP		TPC combination index 10.3.6.85	
>>>SSDT Cell Identity	OP		SSDT Cell Identity 10.3.6.76	
>>>Closed loop timing adjustment mode	CH-TxDiversity Mode		Integer(1, 2)	It is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Value in slots
>TDD				
>>DL CCTrCh List	MP	1..<maxCC TrCH>		
>>>TFCS ID	MD		Integer(1..8)	Identity of this CCTrCh. Default value is 1
>>>>Time info	MP		Time Info 10.3.6.83	
>>>>Downlink DPCH timeslots and codes	MD		Downlink Timeslots and Codes 10.3.6.32	Default is to use the old timeslots and codes.
>>>>UL CCTrCH TPC List	MD	0..<maxCC TrCH>		UL CCTrCH identities for TPC commands associated with this DL CCTrCH. Default is previous list or all defined UL CCTrCHs

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>>UL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21	

Condition	Explanation
<i>SF/2</i>	The information element is mandatory <u>present</u> if the UE has an active compressed mode pattern sequence, which is using compressed mode method "SF/2". Otherwise the IE is not needed.
<i>TxDiversity Mode</i>	This IE is <u>mandatory</u> present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Otherwise the IE is not needed.

10.3.6.22 Downlink DPCH info for each RL Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>CHOICE <i>Spreading factor</i>	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumber with "code number" in ASN.1
>>Code number	MP		Integer(0.. Spreading factor - 1)	
>>Scrambling code change	CH-SF/2		Enumerated (code change, no code change)	Indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'.
>>>TPC combination index	MP		TPC combination index 10.3.6.85	
>TDD				
>>Downlink DPCH timeslots and codes	MP		Downlink Timeslots and Codes 10.3.6.32	

## 10.3.6.23 Downlink DPCH power control information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>DPC Mode	MP		Enumerated (Single TPC, TPC triplet in soft)	"Single TPC" is DPC_Mode=0 and "TPC triplet in soft" is DPC_mode=1 in [29].
>TDD				
>>TPC Step Size	OP		Integer (1, 2, 3)	In dB

## 10.3.6.24 Downlink information common for all radio links

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	OP		Downlink DPCH info common for all RL 10.3.6.18	
CHOICE <i>mode</i>	MP			
>FDD				
>>DPCH compressed mode info	MD		DPCH compressed mode info 10.3.6.33	Default value is the existing value of DPCH compressed mode information
>>TX Diversity Mode	MD		TX Diversity Mode 10.3.6.86	Default value is the existing value of TX Diversity mode
>>SSDT information	OP		SSDT information 10.3.6.77	
>TDD				(no data)
Default DPCH Offset Value	OP		Default DPCH Offset Value, 10.3.6.16	

## 10.3.6.25 Downlink information common for all radio links Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Post 10.3.6.19	

## 10.3.6.26 Downlink information common for all radio links Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Pre 10.3.6.20	

## 10.3.6.27 Downlink information for each radio link

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>PDSCH with SHO DCH Info	OP		PDSCH with SHO DCH Info 10.3.6.47	
>>PDSCH code mapping	OP		PDSCH code mapping 10.3.6.43	
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57	
Downlink DPCH info for each RL	OP		Downlink DPCH info for each RL 10.3.6.21	
SCCPCH Information for FACH	OP		SCCPCH Information for FACH 10.3.6.70	

## 10.3.6.28 Downlink information for each radio link Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info post 10.3.6.58	
Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL Post 10.3.6.22	

## 10.3.6.29 Void

## 10.3.6.30 Downlink PDSCH information

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PDSCH with SHO DCH Info	OP		PDSCH with SHO DCH Info 10.3.6.47	
PDSCH code mapping	OP		PDSCH code mapping 10.3.6.43	

### 10.3.6.31 Downlink rate matching restriction information

This IE indicates which TrCH is restricted in TFI.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Restricted TrCH information	OP	1 to <maxTrCH >		
>Downlink transport channel type	MP		Enumerated(DCH,DSCH)	
>Restricted DL TrCH identity	MP		Transport channel identity 10.3.5.18	
>Allowed TFIs	MP	1 to <maxTF>		
>>Allowed TFI	MP		Integer(0..31)	

### 10.3.6.32 Downlink Timeslots and Codes

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
First Individual timeslot info	MP		Individual timeslot info 10.3.6.37	Individual timeslot info for the first timeslot used by the physical layer.
First timeslot channelisation codes	MP		Downlink channelisation codes 10.3.6.17	These codes shall be used by the physical layer in the timeslot given in First Individual timeslot info.
CHOICE <i>more timeslots</i>	MP			
>No more timeslots				(no data)
>Consecutive timeslots				
>>Number of additional timeslots	MP		Integer(1..maxTS-1)	The timeslots used by the physical layer shall be timeslots: N mod maxTS (N+1) mod maxTS ... (N+k) mod maxTS in that order, where N is the timeslot number in the First individual timeslot info and k the Number of additional timeslots. The additional timeslots shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) as the first timeslot.
>Timeslot list				
>>Additional timeslot list	MP	1 to <maxTS-1>		The first instance of this parameter corresponds to the timeslot that shall be used second by the physical layer, the second to the timeslot that shall be used third and so on.
>>>CHOICE <i>parameters</i>	MP			
>>>>Same as last				
>>>>>Timeslot number	MP		Timeslot Number 10.3.6.84	The physical layer shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) for this timeslot as for the last one.
>>>>>New parameters				
>>>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.37	
>>>>>Channelisation codes	MP		Downlink channelisation codes 10.3.6.17	

### 10.3.6.33 DPCH compressed mode info

NOTE: Only for FDD.

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence	MP	1 to <maxTGP S>		
>TGPSI	MP		TGPSI	



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

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				the transmission gap pattern (without including the effect of the bit-rate increase)
>>DeltaSIRafter1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the first transmission gap in the transmission gap pattern.
>>DeltaSIR2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the second transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase) When omitted, DeltaSIR2 = DeltaSIR1.
>>DeltaSIRafter2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the second transmission gap in the transmission gap pattern. When omitted, DeltaSIRafter2 = DeltaSIRafter1.
>>N Identify abort	CV-Initial BSIC		Integer(1..128)	Indicates the maximum number of repeats of patterns that the UE shall use to attempt to decode the unknown BSIC of the GSM cell in the initial BSIC identification procedure
>>T Reconfirm abort	CV-Re-confirm BSIC		Real(0.5..10.0 by step of 0.5)	Indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure. The time is given in steps of 0.5 seconds.

Condition	Explanation
Active	This information element is <del>only sent</del> <u>mandatory present</u> when the value of the "TGPS Status Flag" IE is "Active" <u>and not needed otherwise.</u>
Initial BSIC	This information element is <del>only sent</del> <u>mandatory present</u> when the value of the IE "TGMP" is set to "GSM Initial BSIC identification" <u>and not needed otherwise.</u>
Re-confirm BSIC	This information element is <del>only sent</del> <u>mandatory present</u> when the value of the IE "TGMP" is set to "GSM BSIC re-confirmation" <u>and not needed otherwise.</u>

### 10.3.6.34 DPCH Compressed Mode Status Info

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

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

Condition	Explanation
Active	This information element is <u>only sent</u> <u>mandatory present</u> when the value of the "TGPS Status Flag" IE is "Active" <u>and not needed otherwise.</u>

### 10.3.6.35 Dynamic persistence level

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Dynamic persistence level	MP		Integer(1..8)	Level shall be mapped to a dynamic persistence value in the range 0 .. 1.

### 10.3.6.36 Frequency info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>UARFCN uplink (Nu)	OP		Integer(0..16383)	[21] If IE not present, default duplex distance of 190 MHz shall be used.
>>UARFCN downlink (Nd)	MP		Integer(0 .. 16383)	[21]
>TDD				
>>UARFCN (Nt)	MP		Integer(0 .. 16383)	[22]

## 10.3.6.37 Individual timeslot info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timeslot number	MP		Timeslot number 10.3.6.84	Timeslot within a frame
TFCI existence	MP		Boolean	TRUE indicates that the TFCI exists. It shall be coded in the first physical channel of this timeslot.
Midamble Shift and burst type	MP		Midamble shift and burst type 10.3.6.41	

## 10.3.6.38 Individual Timeslot interference

Parameters used by the UE for uplink open loop power control in TDD.

Information element	Need	Multi	Type and reference	Semantics description
Timeslot number	MP		Timeslot number 10.3.6.84	
UL Timeslot Interference	MP		UL Interference 10.3.6.87	

## 10.3.6.39 Maximum allowed UL TX power

This information element indicates the maximum allowed uplink transmit power.

Information Element	Need	Multi	Type and reference	Semantics description
Maximum allowed UL TX power	MP		Integer(-50..33)	In dBm

## 10.3.6.40 Void

## 10.3.6.41 Midamble shift and burst type

NOTE: Only for TDD.

This information element indicates burst type and midamble allocation. Three different midamble allocation schemes exist:

- Default midamble: the midamble shift is selected by layer 1 depending on the associated channelisation code (DL and UL)
- Common midamble: the midamble shift is chosen by layer 1 depending on the number of channelisation codes (possible in DL only)
- UE specific midamble: a UE specific midamble is explicitly assigned (DL and UL).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Burst Type</i>	MP			
>Type 1				
>>Midamble Allocation Mode	MP		Enumerated (Default midamble, Common midamble, UE specific midamble)	
>>Midamble configuration burst type 1 and 3	MP		Integer(4, 8, 16)	As defined in [30]
>>Midamble Shift	CV-UE		Integer(0..15)	
>Type 2				
>>Midamble Allocation Mode	MP		Enumerated (Default midamble, Common midamble, UE specific midamble)	
>>Midamble configuration burst type 2	MP		Integer(3, 6)	As defined in [30]
>>Midamble Shift	CV-UE		Integer(0..5)	
>Type 3				
>>Midamble Allocation Mode	MP		Enumerated (Default midamble, UE specific midamble)	
>>Midamble configuration burst type 1 and 3	MP		Integer(4, 8, 16)	As defined in [30]
>>Midamble Shift	CV-UE		Integer (0..15)	NOTE: Burst Type 3 is only used in uplink.

Condition	Explanation
UE	This information element is <u>only sent</u> <u>mandatory present</u> when the value of the "Midamble Allocation Mode" IE is "UE-specific midamble" <u>and not needed otherwise</u> .

10.3.6.42 PDSCH Capacity Allocation info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PDSCH allocation period info	MP		Allocation Period Info 10.3.6.4	
TFCS ID	MD		Integer(1..8)	Default is 1.
CHOICE <i>Configuration</i>	MP			
>Old configuration				
>>PDSCH Identity	MP		Integer(1..Hi PDSCHIdentities)	
>New configuration				
>>PDSCH Info	MP		PDSCH Info 10.3.6.44	
>>PDSCH Identity	OP		Integer(1..Hi PDSCHIdentities)	
>>PDSCH power control info	OP		PDSCH power control info 10.3.6.45	

### 10.3.6.43 PDSCH code mapping

NOTE: Only for FDD.

This IE indicates the association between each possible value of TFCI(field 2) and the corresponding PDSCH channelisation code(s). The following signalling methods are specified:

- 'code range': the mapping is described in terms of a number of groups, each group associated with a given spreading factor;
- 'TFCI range': the mapping is described in terms of a number of groups, each group corresponding to a given PDSCH channelisation code;
- 'Explicit': the mapping between TFCI(field 2) value and PDSCH channelisation code is spelt out explicitly for each value of TFCI (field2);
- 'Removal': replace individual entries in the TFCI(field 2) to PDSCH code mapping table with new PDSCH code values.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Scrambling Code	MD		Secondary scrambling code 10.3.6.74	Scrambling code on which PDSCH is transmitted. Default is the same scrambling code as for the Primary CPICH
Choice <i>signalling method</i>	MP			
>code range				
>>PDSCH code mapping	MP	1 to < maxPDSC H-TFCIgroups >		
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>multi-code info	MP		Integer(1..16)	
>>>Code number (for PDSCH code) start	MP		Integer(0..Spreading factor-1)	
>>>Code number (for PDSCH code) stop	MP		Integer(0..Spreading factor-1)	
>TFCI range				
>>DSCH mapping	MP	1 to < maxPDSC H-TFCIgroups >		
>>>Max TFCI(field2) value	MP		Integer(1..1023)	This is the maximum value in the range of TFCI(field 2) values for which the specified PDSCH code applies
>>>Spreading factor (for PDSCH code)	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>Code number (for PDSCH code)	MP		Integer(0..Spreading factor-1)	
>>>multi-code info	MP		Integer(1..16)	
>Explicit				
>>PDSCH code info	MP	1 to < maxTFCI-2-Combs >		The first instance of the parameter <i>PDSCH code</i> corresponds to TFCI (field2) = 0, the second to TFCI(field 2) = 1 and so on.
>>>Spreading factor (for PDSCH code)	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>Code number (for PDSCH code)	MP		Integer(0..Spreading factor-1)	
>>>multi-code info	MP		Integer(1..16)	
>Replace				This choice is made if the PDSCH code(s) associated with a given value of TFCI(field 2) is to be replaced.
>>Replaced PDSCH code	MP	1 to < maxTFCI-2-Combs >		Identity of the PDSCH code(s) to be used for the specified value of TFCI(field 2). These code identity(s) replace any that had been specified before
>>>TFCI (field 2)	MP		Integer	Value of TFCI(field 2) for



Information Element/Group name	Need	Multi	Type and reference	Semantics description
			(0..1023)	which PDSCH code mapping will be changed
>>>Spreading factor (for PDSCH code)	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>Code number (for PDSCH code)	MP		Integer(0..Spreading factor-1)	
>>>multi-code info	MP		Integer(1..16)	

#### 10.3.6.44 PDSCH info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Integer(1..8)	TFCS to be used. Default value is 1.
Common timeslot info	OP		Common timeslot info 10.3.6.10	
PDSCH timeslots and codes	OP		Downlink Timeslots and Codes 10.3.6.32	Default is to use the old timeslots and codes.

#### 10.3.6.45 PDSCH Power Control info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TPC Step Size	OP		Integer (1, 2, 3)	In dB
UL CCTrCH TPC List	OP	1..<maxCC TrCH>		UL CCTrCH identities for TPC commands associated with this DL CCTrCH
>UL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21	

#### 10.3.6.46 PDSCH system information

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PDSCH information	MP	1 to <maxPDSCH>		
>PDSCH Identity	MP		Integer(1..Hi PDSCHIdentities)	
>PDSCH info	MP		PDSCH info 10.3.6.44	
>SFN Time Info	CH-Block17		SFN Time Info 10.3.6.75	
>DSCH TFS	OP		Transport format set 10.3.5.23	
>DSCH TFCS	OP		Transport Format Combination Set 10.3.5.20	

Condition	Explanation
Block17	This IE is absent <u>not needed</u> in System Information Block 17. Otherwise it is optional.

### 10.3.6.47 PDSCH with SHO DCH Info

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DSCH radio link identifier	MP		Primary CPICH info 10.3.6.60	This parameter indicates on which radio link the user will be allocated resource on the DSCH.
TFCI(field2) Combining set	OP	1 to <maxRL>		This is used to indicate which of the downlink TFCI(field 2) transmissions made on the DPCCs within the active set should be soft combined on the physical layer. This parameter may only be sent if there is a 'hard' split of the TFCI field and in this case the sending of the parameter is optional.
>Radio link identifier	MP		Primary CPICH info 10.3.6.60	

### 10.3.6.48 Persistence scaling factors

This IE defines scaling factors associated with ASC 2 – ASC 7 to be applied to the dynamic persistence value.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Access Service Class	MP	1 to maxASCpe rsist		multiplicity corresponds to the number of PRACH partitions minus 2
>Persistence scaling factor	MP		Real(0.9..0.2 , by step of 0.1)	Scaling factors in the range 0,...,1

### 10.3.6.49 PICH Info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Channelisation code	MP		Integer(0..255)	SF is fixed and equal to 256
>>Number of PI per frame	MP		Integer (18, 36, 72, 144)	
>>STTD indicator	MP		STTD Indicator 10.3.6.78	
>TDD				
>>Channelisation code	MD		Enumerated ( (16/1)...(16/16) )	Default value is the channelisation code used by the SCCPCH carrying the associated PCH.
>>Timeslot number	MD		Timeslot number 10.3.6.84	Default value is the timeslot used by the SCCPCH carrying the associated PCH.
>>CHOICE <i>Burst Type</i>	MP			
>>>Type 1				
>>>>Midamble Shift	MP		Integer(0..15)	
>>>Type 2				
>>>>Midamble Shift	MP		Integer(0..5)	
>>Repetition period/length	MD		Enumerated( (4/2),(8/2), (8/4),(16/2), (16/4), (32/2),(32/4), (64/2),(64/4) )	Default value is "(64/2)".
>>Offset	MP		Integer (0...Repetition period -1)	SFN mod Repetitionperiod = Offset.
>>Paging indicator length	MD		Integer (4, 8, 16)	Indicates the length of one paging indicator in Bits. Default value is 4.
>>N <sub>GAP</sub>	MD		Integer(2, 4, 8)	Number of frames between the last frame carrying PICH for this Paging Occasion and the first frame carrying paging messages for this Paging Occasion. Default value is 4.
>>N <sub>PCH</sub>	MD		Integer(1 .. 8)	Number of paging groups. Default value is 2.

### 10.3.6.50 PICH Power offset

This is the power transmitted on the PICH minus power of the Primary CPICH in FDD and Primary CCPCH Tx Power in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PICH Power offset	MP		Integer(-10 .. +5)	Offset in dB

### 10.3.6.51 PRACH Channelisation Code List

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>SF</i>	MP			
> <i>SF</i> 16				
>>Channelisation Code List	MP	1 to 8		
>>>Channelisation code	MP		Enumerated ((16/1)..(16/16))	1:1 mapping between spreading code and midamble shift
> <i>SF</i> 8				
>>Channelisation Code List	MP	1 to 8		
>>>Channelisation Code	MP		Enumerated( (8/1)..(8/8))	

## 10.3.6.52 PRACH info (for RACH)

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Available Signature	MP		Bitstring(16)	Each bit indicates availability for a signature, where the signatures are numbered "signature 0" up to "signature 15". The value 1 of a bit indicates that the corresponding signature is available and the value 0 that it is not available.
>>Available SF	MP		Integer (32,64,128,256)	In chips per symbol Defines the minimum allowed SF (i.e. the maximum rate)
>>Preamble scrambling code number	MP		Integer (0 .. 15)	Identification of scrambling code see [28]
>>Puncturing Limit	MP		Real(0.40..1.00 by step of 0.04)	
>>Available Sub Channel Number	MP		Bitstring(12)	Each bit indicates availability for a subchannel, where the subchannels are numbered "subchannel 0" to "subchannel 11". The value 1 of a bit indicates that the corresponding subchannel is available and the value 0 indicates that it is not available.
>TDD				
>>Timeslot number	MP		Timeslot number 10.3.6.84	
>>PRACH Channelisation Code List	MP		PRACH Channelisation Code List 10.3.6.51	
>>PRACH Midamble	MP		Enumerated (Direct, Direct/Inverted)	Direct or direct and inverted midamble are used for PRACH

## 10.3.6.53 PRACH partitioning

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Access Service class	MP	1 to maxASC		
ASC Setting	MD		ASC setting 10.3.6.6	The default values are same as the previous ASC. If the "default" is used for the first ASC, the default values are all available signatures and "all available subchannels" for FDD and "all available channelisation codes" and "all available subchannels" with "subchannel size=Size 1" in TDD.

## 10.3.6.54 PRACH power offset

NOTE: Only for FDD.

<b>Information Element/Group name</b>	<b>Need</b>	<b>Multi</b>	<b>Type and reference</b>	<b>Semantics description</b>
Power Ramp Step	MP		Integer (1..8)	Power step when no acquisition indicator is received in dB
Preamble Retrans Max	MP		Integer (1..64)	Maximum number of preambles in one preamble ramping cycle

## 10.3.6.55 PRACH system information list

Information element	Need	Multi	Type and reference	Semantics description
PRACH system information	MP	1 .. <maxPRA CH>		
>PRACH info	MP		PRACH info (for RACH) 10.3.6.52	
>Transport channel identity	MP		Transport channel identity 10.3.5.18	
>RACH TFS	MD		Transport format set 10.3.5.23	Default value is the value of "RACH TFS" for the previous PRACH in the list NOTE: The first occurrence is then MP) NOTE: For TDD in this release there is a single TF within the RACH TFS.
>RACH TFCS	MD		Transport Format Combination Set 10.3.5.20	Default value is the value of "RACH TFCS" for the previous PRACH in the list. NOTE: The first occurrence is then MP). NOTE: For TDD in this release there is no TFCS required.
>PRACH partitioning	MD		PRACH partitioning 10.3.6.53	Default value is the value of "PRACH partitioning" for the previous PRACH in the list (note : the first occurrence is then MP)
>Persistence scaling factors	OP		Persistence scaling factors 10.3.6.48	This IE shall not be present if only ASC 0 and ASC 1 are defined. If this IE is absent, value is the value of "Persistence scaling factors" for the previous PRACH in the list if value exists
>AC-to-ASC mapping	OP		AC-to-ASC mapping 10.3.6.1	Only present in SIB 5 If this IE is absent, value is the value of "AC-to-ASC mapping" for the previous PRACH in the list if value exists
>CHOICE <i>mode</i>	MP			
>>FDD				
>>>Primary CPICH TX power	MD		Primary CPICH TX power 10.3.6.61	Default value is the value of "Primary CPICH TX power" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>Constant value	MD		Constant value 10.3.6.11	Default value is the value of "Constant value" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>PRACH power offset	MD		PRACH power offset 10.3.6.54	Default value is the value of "PRACH power offset" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>RACH transmission parameters	MD		RACH transmission parameters	Default value is the value of "RACH transmission parameters" for the previous

			10.3.6.67	PRACH in the list (note : the first occurrence is then MP)
>>>AICH info	MD		AICH info 10.3.6.2	Default value is the value of "AICH info" for the previous PRACH in the list (note : the first occurrence is then MP)
>>TDD				(no data)

NOTE: If the setting of the PRACH information results in that a combination of a signature, preamble scrambling code and subchannel corresponds to a RACH with different TFS and/or TFCS, then for that combination only the TFS/TFCS of the PRACH listed first is valid, where PRACHs listed in System Information Block type 5 shall be counted first.

### 10.3.6.56 Predefined PhyCH configuration

This information element concerns a pre- defined configuration of physical channel parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
<b>Uplink radio resources</b>				
Uplink DPCH info	MP		Uplink DPCH info Pre 10.3.6.90	
<b>Downlink radio resources</b>				
Downlink information common for all radio links	OP		Downlink information common for all radio links Pre 10.3.6.26	

### 10.3.6.57 Primary CCPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>TX Diversity indicator	MP		Boolean	
>TDD				
>>CHOICE <i>SyncCase</i>	OP			
>>>Sync Case 1				
>>>>Timeslot	MP		Integer (0..14)	PCCPCH timeslot
>>>Sync Case 2				
>>>>Timeslot	MP		Integer(0..6)	
>>Cell parameters ID	OP		Cell parameters Id 10.3.6.9	The Cell parameters ID is described in [32].
>>Block STTD indicator	MP		Block STTD indicator 10.3.6.7	

### 10.3.6.58 Primary CCPCH info post

NOTE: Only for TDD



Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>SyncCase</i>	MP			
>Sync Case 1				
>>Timeslot	MP		Integer (0...14)	PCCPCH timeslot
>Sync Case 2				
>>Timeslot	MP		Integer(0..6)	
Cell parameters ID	MP		Cell parameters Id 10.3.6.9	The Cell parameters ID is described in [32].
Block STTD indicator	MP		Block STTD indicator 10.3.6.7	

### 10.3.6.59 Primary CCPCH TX Power

NOTE: Only for TDD.

Information Element/group name	Need	Multi	Type and reference	Semantics description
Primary CCPCH Tx Power	MP		Integer(6..43)	In dBm

### 10.3.6.60 Primary CPICH info

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary scrambling code	MP		Integer(0..511)	

### 10.3.6.61 Primary CPICH Tx power

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary CPICH Tx Power	MP		Integer(-10..50)	Power in dBm.

### 10.3.6.62 Primary CPICH usage for channel estimation

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Primary CPICH usage for channel estimation	MP		Enumerated(Primary CPICH may be used, Primary CPICH shall not be used)	

### 10.3.6.63 PUSCH info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Integer(1..8)	Default value is 1
Common timeslot info	OP		Common timeslot info 10.3.6.10	
PUSCH timeslots and codes	OP		Uplink Timeslots and Codes 10.3.6.94	

### 10.3.6.64 PUSCH Capacity Allocation info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>PUSCH allocation</i>	MP			
>PUSCH allocation pending				(no data)
>PUSCH allocation assignment				
>>PUSCH allocation period info	MP		Allocation Period Info 10.3.6.4	
>>>PUSCH power control info	OP		PUSCH power control info 10.3.6.65	
>>>>TFCS ID	MD		Integer(1..8)	Default is 1.
>>>>CHOICE <i>Configuration</i>	MP			
>>>>>Old configuration				
>>>>>>PUSCH Identity	MP		Integer(1..Hi PUSCH Identities)	
>>>>>>>New configuration				
>>>>>>>>PUSCH info	MP		PUSCH info 10.3.6.63	
>>>>>>>>>PUSCH Identity	OP		Integer(1..Hi PUSCH Identities)	

### 10.3.6.65 PUSCH power control info

NOTE: Only for TDD.

Interference level measured for a frequency at the UTRAN access point used by UE to set PUSCH output power.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL target SIR	MP		Real (-11 .. 20 by step of 0.5)	in dB

### 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..Hi PUSCHidentities)	
>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		Transport Format Combination Set 10.3.5.20	

Condition	Explanation
Block17	This IE is absent <u>not needed</u> in System Information Block 17. Otherwise it is optional.

### 10.3.6.67 RACH transmission parameters

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Mmax	MP		Integer(1..32)	Maximum number of preamble cycles
NB01min	MP		Integer(0..50)	Sets lower bound for random back-off
NB01max	MP		Integer(0..50)	Sets upper bound for random back-off

### 10.3.6.68 Radio link addition information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL 10.3.6.21	
TFCI combining indicator	OP		TFCI combining indicator 10.3.6.81	
SCCPCH Information for FACH	OP		SCCPCH Information for FACH 10.3.6.70	Note 1

NOTE 1: These IEs are present when the UE needs to listen to system information on FACH in CELL\_DCH state.

## 10.3.6.69 Radio link removal information

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

## 10.3.6.70 SCCPCH Information for FACH

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Secondary CCPCH info	MP		Secondary CCPCH info 10.3.6.71	
TFCS	MP		Transport format combination set 10.3.5.20	For FACHs and PCH
FACH/PCH information	MP	1 to <maxFACH/HPCH>		
>TFS	MP		Transport format set 10.3.5.23	For each FACHs and PCH
>Transport channel identity	MP		Transport channel identity 10.3.5.18	
>CTCH indicator	MP		Boolean	The value "TRUE" indicates that a CTCH is mapped on the FACH, and "FALSE" that no CTCH is mapped.
CHOICE mode				
>FDD				
>>References to system information blocks	MP	1 to <maxSIB-FACH>		
>>>Scheduling information	MP		Scheduling information 10.3.8.16	
>>>SIB type SIBs only	MP		SIB Type SIBs only, 10.3.8.22	
>TDD				(No data)

NOTE: TFS for PCH shall be the first "FACH/PCH information" in the list if a PCH exists for the respective secondary CCPCH.

## 10.3.6.71 Secondary CCPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73	May only be sent for SCCPCH channels not carrying the PCH.
>>Secondary scrambling code	OP		Secondary scrambling code 10.3.6.74	May only be sent for SCCPCH channels not carrying the PCH.
>>STTD indicator	MD		STTD Indicator 10.3.6.78	Default value is "TRUE"
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>Code number	MP		Integer(0..Spreading factor - 1)	
>>Pilot symbol existence	MD		Boolean	TRUE means the existence. Default value is "TRUE"
>>TFCI existence	MD		Boolean	TRUE means the existence. Default value is "TRUE"
>>Fixed or Flexible Position	MD		Enumerated (Fixed, Flexible)	Default value is "Flexible"
>>Timing Offset	MD		Integer(0..38144 by step of 256)	Chip Delay of the Secondary CCPCH relative to the Primary CCPCH. Default value is 0.
>TDD				
>>Offset	MP		Integer (0..Repetition Period -1)	SFN modulo Repetition period = offset. Repetition period is the one indicated in the accompanying Common timeslot info IE
>>Common timeslot info	MP		Common timeslot info 10.3.6.10	
>>Individual timeslot info	MP		Individual timeslot info 10.3.6.37	
>>Code List	MP	1 to 16		
>>>Channelisation Code	MP		Enumerated((16/1)..(16/16))	

## 10.3.6.72 Secondary CCPCH system information

Information element	Need	Multi	Type and reference	Semantics description
Secondary CCPCH system information	MP	1 to <maxSCC PCH>		
>Secondary CCPCH info	MP		Secondary CCPCH info 10.3.6.71	Note 1
>TFCS	MD		Transport format combination set 10.3.5.20	For FACHs and PCH Default value is the value of "TFCS" for the previous SCCPCH in the list (note : the first occurrence is then MP)
>FACH/PCH information	MD	1 to <maxFACH PCH>		Default value is the value of "FACH/PCH" for the previous SCCPCH in the list (note : the first occurrence is then MP)
>>TFS	MP		Transport format set 10.3.5.23	For each FACH and PCH Note 2
>>Transport channel identity	MP		Transport channel identity 10.3.5.18	
>>CTCH indicator	MP		Boolean	The value "TRUE" indicates that a CTCH is mapped on the FACH, and "FALSE" that no CTCH is mapped.
>PICH info	OP		PICH info 10.3.6.49	PICH info is present only when PCH is multiplexed on Secondary CCPCH

NOTE 1: The secondary CCPCHs carrying a PCH shall be listed first.

NOTE 2: TFS for PCH shall be the first "FACH/PCH information" in the list if a PCH exists for the respective secondary CCPCH.

## 10.3.6.73 Secondary CPICH info

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
Channelisation code	MP		Integer(0..255)	SF=256

## 10.3.6.74 Secondary scrambling code

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Secondary scrambling code	MP		Integer(1..15)	

## 10.3.6.75 SFN Time info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Activation time SFN	MP		Integer (0..4095)	System frame number start of the physical channel existence.
Duration	MP		Integer(1..4096)	Total number of frames the physical channel will exist.

## 10.3.6.75a Special Burst Scheduling

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Special Burst Generation Period	MP		Integer (2, 4, 8, 16, 32, 64, 128, 256)	Value in radio frames

## 10.3.6.76 SS DT cell identity

NOTE: Only for FDD.

This IE is used to associate a cell identity with a given radio link.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SSDT cell id	MP		Enumerated (a, b, c, d, e, f, g, h)	

## 10.3.6.77 SS DT information

NOTE: Only for FDD.

This information element indicates the status (e.g. initiated/terminated) of the Site Selection.

Diversity Transmit power control (SSDT). It is used to change the SSDT status. The parameter 'code word set' indicates how cell identities are coded (using many bits or few, values are long, medium, or short).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
S field	MP		Integer (1, 2)	in bits
Code Word Set	MP		Enumerated (long, medium, short, SSDT off)	

NOTE: These parameters shall be set optionally associated with DL DPCH info but not for each RL.

## 10.3.6.78 STTD indicator

Indicates whether STTD is used or not.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
STTD Indicator	MP		Boolean	TRUE means that STTD is used

### 10.3.6.79 TDD open loop power control

This information element contains parameters for open loop power control setting for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.59	For path loss calculation
Alpha	OP		Alpha 10.3.6.5	
PRACH Constant Value	MP		Constant Value 10.3.6.11	Operator controlled PRACH Margin
DPCH Constant Value	MP		Constant Value 10.3.6.11	Operator controlled UL DPCH Margin
PUSCH Constant Value	OP		Constant Value 10.3.6.11	Operator controlled PUSCH Margin

### 10.3.6.80 TFC Control duration

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFC Control duration	MP		Integer (1, 2, 4, 8, 16, 24, 32, 48, 64, 128, 192, 256, 512)	Defines the period in multiples of 10 ms frames for which the defined TFC sub-set is to be applied.

### 10.3.6.81 TFCI Combining Indicator

NOTE: Only for FDD.

This IE indicates whether the TFCI (field 2), which will be transmitted on the DPCCCH of a newly added radio link, should be soft-combined with the others in the TFCI (field 2) combining set. This IE can only be sent when the UE is in CELL\_DCH state with a DSCH transport channel assigned and when there is a 'hard' split in the TFCI field (such that TFCI1 and TFCI2 have their own separate block coding).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCI combining indicator	MP		Boolean	TRUE means that TFCI is combined

### 10.3.6.82 TGPSI

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPSI	MP		Integer(1..MaxTGPS)	Transmission Gap Pattern Sequence Identifier Establish a reference to the compressed mode pattern sequence. Up to <MaxTGPS>



Information Element/Group name	Need	Multi	Type and reference	Semantics description
				simultaneous compressed mode pattern sequences can be used.

## 10.3.6.83 Time info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Activation time	MD		Activation time 10.3.3.1	Frame number start of the physical channel existence. Default value is "Now"
Duration	MD		Integer(1..4096, infinite)	Total number of frames the physical channel will exist. Default value is "infinite".

## 10.3.6.84 Timeslot number

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timeslot number	MP		Integer(0..14)	Timeslot within a frame

## 10.3.6.85 TPC combination index

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TPC combination index	MP		Integer(0..5)	Radio links with the same index have TPC bits, which for the UE are known to be the same.

## 10.3.6.86 TX Diversity Mode

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Tx diversity Mode	MP		Enumerated (none, STTD, closed loop mode1, closed loop mode2)	

## 10.3.6.87 UL interference

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL interference	MP		Integer (-110..-70)	In dBm

NOTE: In TDD, this IE is a timeslot specific value.

10.3.6.88 Uplink DPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info 10.3.6.91	
CHOICE <i>mode</i>	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>>Scrambling code number	MP		Integer(0..16777215)	
>>>Number of DPDCH	MD		Integer(2..maxDPDCH)	Default value is 1. Number of DPDCH is 1 in HANDOVER TO UTRAN COMMAND
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	Minimum allowed SF of the channelisation code for data part
>>>TFCI existence	MD		Boolean	TRUE means existence. Default value is "TRUE"
>>>Number of FBI bits	CH		Integer (1, 2)	In bits. Number of FBI bits is needed if SSdT or FB Mode Transmit Signalling is supported.
>>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				
>>Uplink Timing Advance Control	OP		Uplink Timing Advance Control 10.3.6.96	
>>>UL CCTrCH List	MP	1 to <maxCCTrCH>		
>>>>TFCS ID	MD		Integer(1..8)	Default value is 1.
>>>>Time info	MP		Time info 10.3.6.83	
>>>>Common timeslot info	MD		Common timeslot info 10.3.6.10	Default is the current Common timeslot info
>>>>Uplink DPCH timeslots and codes	MD		Uplink Timeslots and Codes 10.3.6.94	Default is to use the old timeslots and codes.

Condition	Explanation
Single	This IE is included-mandatory present if IE "Number of DPDCH" is "1" and not needed otherwise

10.3.6.89 Uplink DPCH info Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	MP		Uplink DPCH power control info Post 10.3.6.92	
CHOICE <i>mode</i>	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>>Reduced scrambling code number	MP		Integer(0..8191)	Sub-range of values for initial use upon handover to UTRAN.
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	SF of the channelisation code for data part There is only one DPDCH for this case
>TDD				
>>Uplink Timing Advance Control	OP		Uplink Timing Advance Control 10.3.6.96	
>>>Uplink DPCH timeslots and codes	MP		Uplink Timeslots and Codes 10.3.6.94	

10.3.6.90 Uplink DPCH info Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info Pre 10.3.6.93	
CHOICE <i>mode</i>	MP			
>FDD				
>>TFCI existence	MP		Boolean	TRUE means existence. Default value is "TRUE"
>>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				
>>>Common timeslot info	MP		Common Timeslot Info 10.3.6.10	

Condition	Explanation
<i>Single</i>	This IE is included-mandatory present if IE "Number of DPDCH" is "1" and not needed otherwise

10.3.6.91 Uplink DPCH power control info

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and parameters for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>DPCCH Power offset	MP		Integer(-164,..-6 by step of 2)	In dB
>>PC Preamble	MP		Integer (0..7)	In number of frames
>>SRB delay	MP		Integer(0..7)	In number of frames
>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands
>>TPC step size	CV- <i>algo</i>		Integer (1, 2)	In dB
>TDD				
>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB
>>CHOICE <i>UL OL PC info</i>	MP			
>>>Broadcast UL OL PC info			Null	No data
>>>Individually Signalled	OP			
>>>>Individual timeslot interference info	MP	1 to <maxTS>		
>>>>>Individual timeslot interference	MP		Individual timeslot interference 10.3.6.38	
>>>>DPCH Constant Value	OP		Constant Value 10.3.6.11	Quality Margin
>>>>Primary CCPCH Tx Power	OP		Primary CCPCH Tx Power 10.3.6.59	For Pathloss Calculation

Condition	Explanation
<i>algo</i>	The IE is mandatory <u>present</u> if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

### 10.3.6.92 Uplink DPCH power control info Post

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>DPCCH Power offset	MP		Integer(-110..-50 by step of 4)	In dB
>>PC Preamble	MP		Integer (0..7)	in number of frames
>>SRB delay	MP		Integer (0..7)	In number of frames
>TDD				
>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB
>>UL Timeslot Interference	MP		UL Interference 10.3.6.87	

Condition	Explanation
<i>algo</i>	The IE is mandatory <u>present</u> if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

### 10.3.6.93 Uplink DPCH power control info Pre

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and parameters for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands
>>TPC step size	<i>CV-algo</i>		Integer (1, 2)	In dB
>TDD				(No data)
>>DPCH Constant Value	MP		Constant Value 10.3.6.11	Quality Margin

Condition	Explanation
<i>Algo</i>	The IE is mandatory <u>present</u> if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

### 10.3.6.94 Uplink Timeslots and Codes

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Dynamic SF usage	MP		Boolean	
First Individual timeslot info	MP		Individual timeslot info 10.3.6.37	Individual timeslot info for the first timeslot used by the physical layer.
First timeslot Code List	MP	1..2		Code list used in the timeslot. given in First individual timeslot info.
>Channelisation Code	MP		Enumerated( (1/1),(2/1),(2/2),(4/1)..(4/4),(8/1)..(8/8),(16/1)..(16/16) )	
CHOICE <i>more timeslots</i>	MP			
>No more timeslots				(no data)
>Consecutive timeslots				
>>Number of additional timeslots	MP		Integer(1..maxTS-1)	The timeslots used by the physical layer shall be timeslots: N mod maxTS (N+1) mod maxTS ... (N+k) mod maxTS in that order, where N is the timeslot number in the First individual timeslot info and k the Number of additional timeslots. The additional timeslots shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) as the first timeslot.
>Timeslot list				
>>Additional timeslot list	MP	1 to <maxTS-1>		The first instance of this parameter corresponds to the timeslot that shall be used second by the physical layer, the second to the timeslot that shall be used third and so on.
>>>CHOICE <i>parameters</i>	MP			
>>>>Same as last				
>>>>>Timeslot number	MP		Timeslot Number 10.3.6.84	This physical layer shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) for this timeslot as for the last one.
>>>>>New parameters				
>>>>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.37	
>>>>>>Code List	MP	1..2		
>>>>>>>Channelisation Code	MP		Enumerated( (1/1),(2/1),(2/2),(4/1)..(4/4),(8/1)..(8/8),(16/1)..(16/16) )	

### 10.3.6.95 Uplink Timing Advance

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL Timing Advance	MP		Integer (0..63)	Absolute timing advance value to be used to avoid large delay spread at the NodeB

### 10.3.6.96 Uplink Timing Advance Control

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>CHOICE <i>Timing Advance</i></b>	MP			
>Disabled			Null	Indicates that no timing advance is applied
>Enabled				
>>UL Timing Advance	MD		Uplink Timing Advance 10.3.6.95	Absolute timing advance value to be used to avoid large delay spread at the NodeB. Default value is the existing value for uplink timing advance.
>>Activation Time	OP		Activation Time 10.3.3.1	Frame number timing advance is to be applied. This IE is required when a new UL Timing Advance adjustment is specified and Activation Time is not otherwise specified in the RRC message.

## 10.3.7 Measurement Information elements

### 10.3.7.1 Additional measurements list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Additional measurements	MP	1 to <MaxAdditionalMeas>		
>Additional measurement identity	MP		Measurement identity 10.3.7.48	

### 10.3.7.2 Cell info

Includes non-frequency related cell info used in the IE "inter-frequency cell info list" and "intra frequency cell info list".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell individual offset	MD		Real(-10..10 by step of 0.5)	In dB Default value is 0 dB Used to offset measured quantity value
Reference time difference to cell	OP		Reference time difference to cell 10.3.7.60	In chips. This IE is absent for serving cell.
Read SFN indicator	MP		Boolean	TRUE indicates that read of SFN is requested for the target cell
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH info	OP		Primary CPICH info 10.3.6.60	This IE is absent only if measuring RSSI only (broadband measurement.)
>>>Primary CPICH Tx power	OP		Primary CPICH Tx power 10.3.6.61	Required if calculating pathloss.
>>>TX Diversity Indicator	MP		Boolean	
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57	
>>>Primary CCPCH TX power	OP		Primary CCPCH TX power 10.3.6.59	
>>>Timeslot list	OP	1 to <maxTS>		The UE shall report Timeslot ISCP values according the order of the listed Timeslot numbers
>>>>Timeslot number	MP		Integer (0...14)	Timeslot numbers, for which the UE shall report Timeslot ISCP
>>>>Burst Type	MD		Enumerated (Type1, Type2)	Use for Timeslot ISCP measurements only. Default value is "Type1"
Cell Selection and Re-selection Info	CV- <i>BCHopt</i>		Cell Selection and Re-selection for SIB11/12Info 10.3.2.4	This IE is absent for serving cell. For neighbouring cell, if HCS is not used and all the parameters in cell selection and re-selection info are default value, this IE is absent.

Condition	Explanation
<i>BCHopt</i>	This IE is Optional when sent in SYSTEM INFORMATION, Otherwise, the IE is not needed

### 10.3.7.3 Cell measured results

Includes non-frequency related measured results for a cell.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell Identity	OP		Cell Identity 10.3.2.2	
SFN-SFN observed time difference	OP		SFN-SFN observed time difference 10.3.7.63	
Cell synchronisation information	OP		Cell synchronisation information 10.3.7.6	
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>CPICH Ec/No	OP		Integer(0..50)	According to CPICH_Ec/No in [19] and [20]
>>CPICH RSCP	OP		Integer(0..91)	According to CPICH_RSCP in [19] and [20]
>>Pathloss	OP		Integer(46..158)	In dB
>TDD				
>>Cell parameters Id	MP		Cell parameters Id 10.3.6.9	
>>Proposed TGSN	OP		Integer (0..14)	Proposal for the next TGSN
>>Primary CCPCH RSCP	OP		Primary CCPCH RSCP info 10.3.7.54	
>>Pathloss	OP		Integer(46..158)	In dB
>>Timeslot list	OP	1 to <maxTS>		
>>>Timeslot ISCP	MP		Timeslot ISCP Info 10.3.7.65	The UE shall report the Timeslot ISCP in the same order as indicated in the cell info

#### 10.3.7.4 Cell measurement event results

Includes non-frequency related cell reporting quantities.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH info	MP	1 to <maxCellMEas>	Primary CPICH info 10.3.6.60	
>TDD				
>>Primary CCPCH info	MP	1 to <maxCellMEas>	Primary CCPCH info 10.3.6.57	

#### 10.3.7.5 Cell reporting quantities

Includes non-frequency related cell reporting quantities.

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SFN-SFN observed time difference reporting indicator	MP		Enumerated(No report, type 1, type 2)	
Cell synchronisation information reporting indicator	MP		Boolean	
Cell Identity reporting indicator	MP		Boolean	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPICH Ec/N0 reporting indicator	MP		Boolean	
>>CPICH RSCP reporting indicator	MP		Boolean	
>>Pathloss reporting indicator	MP		Boolean	
>TDD				
>>Timeslot ISCP reporting indicator	MP		Boolean	
>>Proposed TGSN Reporting required	MP		Boolean	
>>Primary CCPCH RSCP reporting indicator	MP		Boolean	
>>Pathloss reporting indicator	MP		Boolean	

### 10.3.7.6 Cell synchronisation information

The IE "Cell synchronisation information" contains the OFF and Tm as defined in [7] and [8] and the four most significant bits of the difference between the 12 least significant bits of the RLC Transparent Mode COUNT-C in the UE and the SFN of the measured cell. It is notified to SRNC by Measurement Report message or Measurement Information Element in other RRC messages

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>COUNT-C-SFN frame difference	OP			
>>>COUNT-C-SFN high	MP		Integer(0..3840 by step of 256)	in frames
>>>OFF	MP		Integer(0..255)	in frames
>>Tm	MP		Integer(0..38399)	in chips
>TDD				
>>COUNT-C-SFN frame difference	OP			
>>>COUNT-C-SFN high	MP		Integer(0..3840 by step of 256)	in frames
>>>OFF	MP		Integer(0..255)	in frames

NOTE: This measurement is only used in TDD when cells are not SFN synchronised

## 10.3.7.7 Event results

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>event result</i>	MP			
>Intra-frequency measurement event results			Intra-frequency measurement event results 10.3.7.37	
>Inter-frequency measurement event results			Inter-frequency measurement event results 10.3.7.17	
>Inter-RAT measurement event results			Inter-RAT measurement event results 10.3.7.28	For IS-2000 results, include fields of the <i>Pilot Strength Measurement Message</i> from subclause 2.7.2.3.2.5 of TIA/EIA/IS-2000.5
>Traffic volume measurement event results			Traffic volume measurement event results 10.3.7.69	
>Quality measurement event results			Quality measurement event results 10.3.7.57	
>UE internal measurement event results			UE internal measurement event results 10.3.7.78	
>UE positioning measurement event results			UE positioning measurement event results 10.3.7.101	

CHOICE <i>event result</i>	Condition under which the given event result is chosen
Intra-frequency measurement event results	If measurement type = intra-frequency measurement
Inter-frequency measurement event results	If measurement type = inter-frequency measurement
Inter-RAT measurement event results	If measurement type = inter-RAT measurement
Traffic volume measurement event results	If measurement type = traffic volume measurement
Quality measurement event results	If measurement type = Quality measurement
UE internal measurement event results	If measurement type = UE internal measurement
UE positioning measurement event results	If measurement type = UE positioning measurement

## 10.3.7.8 FACH measurement occasion info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
FACH Measurement occasion cycle length coefficient	OP		Integer(1..12)	
Inter-frequency FDD measurement indicator	MP		Boolean	TRUE means that measurements are required
Inter-frequency TDD measurement indicator	MP		Boolean	TRUE means that measurements are required
Inter-RAT measurement indicators	OP	1 to <maxOther RAT>		
>RAT type	MP		Enumerated(GSM, IS2000)	

10.3.7.9 Filter coefficient

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Filter coefficient	MD		Integer(0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 15, 17, 19)	Default value is 0

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	<i>CV-Penalty used</i>			
>Temporary_offset1	MP		Integer(10, 20, 30, 40, 50, 60, 70, infinity)	[dB]
>Temporary_offset2	<i>CV-FDD-Quality-Measure</i>		Integer(10, 20, 30, 40, 50, 60, 70, infinity)	[dB]

Condition	Explanation
<i>Penalty used</i>	<del>This IE is N</del> <u>not allowed</u> <del>needed</del> if IE Penalty time equals 'not used' else <del>Mp</del> <u>it is mandatory present</u>
<i>FDD-Quality-Measure</i>	Presence is not <del>allowed</del> <u>needed</u> if the IE "Cell_selection_and_reselection_quality_measure" has the value CPICH RSCP, otherwise the IE is <u>mandatory present</u> . This conditional presence is implemented in ASN.1 by the use of a specific RSCP and EcN0 variant of 10.3.7.10.

10.3.7.11 HCS neighbouring cell information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
HCS_PRIO	MD		Integer (0..7)	Default value = 0
Qhcs	MD		Qhcs 10.3.7.54a	Default value = 0
HCS Cell Re-selection Information	MP		HCS Cell Re-selection Information 10.3.7.10	

## 10.3.7.12 HCS Serving cell information

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
HCS_PRIO	MD		Integer (0..7)	Default value = 0
Qhcs	MD		Qhcs 10.3.7.54a	Default value = 0
T <sub>CRmax</sub>	MD		Enumerated( not used, 30, 60, 120, 180, 240)	[s] Default value is not used
N <sub>CR</sub>	CV-UE speed detector		Integer(1..16 )	Default value = 8
T <sub>CRmaxHyst</sub>	CV-UE speed detector		Enumerated( not used, 10, 20, 30, 40, 50, 60, 70)	[s]

Condition	Explanation
UE Speed detector	Not allowed if T <sub>CRmax</sub> equals 'not used' else Mandatory present

## 10.3.7.13 Inter-frequency cell info list

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Inter-frequency cell removal</i>	OP			
>Remove all inter-frequency cells				No data
>Remove some inter-frequency cells				
>>Removed inter-frequency cells	MP	1 .. <maxCellMeas>		
>>>Inter-frequency cell id	MP		Integer(0 .. <maxCellMeas>-1)	
>No inter-frequency cells removed				No data
New inter-frequency cells	OP	1 to <maxCellMeas>		
>Inter-frequency cell id	MD		Integer(0 .. <maxCellMeas>-1)	
>Frequency info	MD		Frequency info 10.3.6.36	Default value is the value of the previous "frequency info" in the list (note : the first occurrence is then MP)
>Cell info	MP		Cell info 10.3.7.2	
Cell for measurement	CV- <i>BCHopt</i>	1 to <maxCellMeas>		
>Inter-frequency cell id	MP		Integer(0 .. <maxCellMeas>-1)	

Condition	Explanation
<i>BCHopt</i>	This IE is not needed when sent in SYSTEM INFORMATION. Otherwise, the IE is Optional

10.3.7.14 Inter-frequency event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency event identity	MP		Enumerated(2a, 2b, 2c, 2d, 2e, 2f)	

10.3.7.15 Inter-frequency measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency measurement results	OP	1 to <maxFreq>		
>Frequency info	MD		Frequency info 10.3.6.36	Default value is the value of the previous "frequency info" in the list (note : the first occurrence is then MP)
>UTRA carrier RSSI	OP		Integer(0..76 )	According to UTRA_carrier_RSSI_LEV in [19] and [20]
>Inter-frequency cell measurement results	OP	1 to <maxCellMeas>		
>>Cell measured results	MP		Cell measured results 10.3.7.3	

10.3.7.16 Inter-frequency measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency cell info list	MP		Inter-frequency cell info list 10.3.7.13	Measurement object
Inter-frequency measurement quantity	OP		Inter-frequency measurement quantity 10.3.7.18	
Inter-frequency reporting quantity	OP		Inter-frequency reporting quantity 10.3.7.21	
Reporting cell status	CV-reporting		Reporting cell status 10.3.7.61	
Measurement validity	OP		Measurement validity 10.3.7.51	
Inter-frequency set update	OP		Inter-frequency set update 10.3.7.22	
<b>CHOICE <i>report criteria</i></b>	MP			
>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>Inter-frequency measurement reporting criteria			Inter-frequency measurement reporting criteria 10.3.7.19	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

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

10.3.7.17 Inter-frequency measurement event results

This IE contains the measurement event results that are reported to UTRAN for inter-frequency measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency event identity	MP		Inter-frequency event identity 10.3.7.14	
Inter-frequency cells	OP	1 to <maxFreq>		
>Frequency info	MP		Frequency info 10.3.6.36	
>Non frequency related measurement event results	MP		Cell measurement event results 10.3.7.4	

### 10.3.7.18 Inter-frequency measurement quantity

The quantity the UE shall measure in case of inter-frequency measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>reporting criteria</i>	MP			
>Intra-frequency reporting criteria				
>>Intra-frequency measurement quantity	MP		Intra-frequency measurement quantity 10.3.7.38	
>Inter-frequency reporting criteria				
>>Filter coefficient	MP		Filter coefficient 10.3.7.9	
>>CHOICE <i>mode</i>	MP			
>>>FDD				
>>>>Measurement quantity for frequency quality estimate	MP		Enumerated(CPICH Ec/N0, CPICH RSCP)	
>>>TDD				
>>>>Measurement quantity for frequency quality estimate	MP		Enumerated(Primary CCPCH RSCP)	

### 10.3.7.19 Inter-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an inter-frequency measurements. All events concerning inter-frequency measurements are labelled 2x where x is a,b,c..

Event 2a: Change of best frequency.

Event 2b: The estimated quality of the currently used frequency is below a certain threshold **and** the estimated quality of a non-used frequency is above a certain threshold.

Event 2c: The estimated quality of a non-used frequency is above a certain threshold.

Event 2d: The estimated quality of the currently used frequency is below a certain threshold.

Event 2e: The estimated quality of a non-used frequency is below a certain threshold.



Event 2f: The estimated quality of the currently used frequency is above a certain threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeasEvent>		
>Inter-frequency event identity	MP		Inter-frequency event identity 10.3.7.14	
>Threshold used frequency	CV-clause 0		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm
>W used frequency	CV-clause 0		Real(0, 0.1..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0, 0.5..14.5 by step of 0.5)	In event 2a, 2b, 2c, 2d, 2e, 2f
>Time to trigger	MP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms.
>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>Parameters required for each non-used frequency	OP	1 to <maxFreq>		
>>Threshold non used frequency	CV-clause 1		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm
>>W non-used frequency	CV-clause 1		Real(0, 0.1..2.0 by step of 0.1)	

Condition	Explanation
Clause 0	The IE is mandatory present in if "inter frequency event identity" is set to 2a,2b, 2d, or 2f, otherwise the IE is not needed
Clause 1	The IE is mandatory present in if "inter frequency event identity" is set to 2a, 2b, 2c or 2e, otherwise the IE is not needed

10.3.7.20 Inter-frequency measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency cell info list	OP		Inter-frequency cell info list 10.3.7.13	

### 10.3.7.21 Inter-frequency reporting quantity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UTRA Carrier RSSI	MP		Boolean	TRUE means report is requested
Frequency quality estimate	MP		Boolean	TRUE means that report is requested
Non frequency related cell reporting quantities	MP		Cell reporting quantities 10.3.7.5	

### 10.3.7.22 Inter-frequency SET UPDATE

NOTE: Only for FDD.

Contains the changes of the active set associated with a non-used frequency. This information makes it possible to use events defined for Intra-frequency measurement within the same non-used frequency for Inter-frequency measurement reporting criteria. This information also controls if the UE should use autonomous updating of the active set associated with a non-used frequency.

Information Element/group name	Need	Multi	Type and reference	Semantics description
UE autonomous update mode	MP		Enumerated (On, On with no reporting, Off)	
Non autonomous update mode	<i>CV-Update</i>			
>Radio link addition information	OP	1 to <maxRL>		Radio link addition information required for each RL to add
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Note 1
>Radio link removal information	OP	1 to <MaxRL>		Radio link removal information required for each RL to remove
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Note 1

Condition	Explanation
<i>Update</i>	The IE is mandatory <u>present</u> if IE"UE autonomous update mode" is set to "Off", otherwise the IE is not needed.

NOTE 1: If it is assumed that CPICH downlink scrambling code is always allocated with sufficient reuse distances, CPICH downlink scrambling code will be enough for designating the different radio links.

### 10.3.7.23 Inter-RAT cell info list

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Inter-RAT cell removal</i>	MP			
>Remove all inter-RAT cells				No data
>Remove some inter-RAT cells				
>>Removed inter-RAT cells	MP	1 to <maxCellMeas>		
>>>Inter-RAT cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no inter-RAT cells				
New inter-RAT cells	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	OP		Integer(0 .. <maxCellMeas> - 1)	
>CHOICE <i>Radio Access Technology</i>	MP			
>>GSM				
>>>Cell individual offset	MP		Integer (-50..50 )	In dB Used to offset measured quantity value
>>>Cell selection and re-selection info	OP		Cell selection and re-selection info for SIB11/12 10.3.2.4	see 8.6.7.3 If HCS is not used and all the parameters in cell selection and re-selection info are default values, this IE is absent.
>>>BSIC	MP		BSIC 10.3.8.2	
>>>Band indicator	MP		Enumerated (DCS 1800 band used, PCS 1900 band used)	Indicates how to interpret the BCCH ARFCN
>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
>>IS-2000				
>>>System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Subclause 3. 7.3.3.2.27, <i>Candidate Frequency Neighbour List Message</i>
Cell for measurement	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	MP		Integer(0 .. <maxCellMeas> -1)	

### 10.3.7.24 Inter-RAT event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT event identity	MP		Enumerated (3a, 3b, 3c, 3d)	

### 10.3.7.25 Inter-RAT info

Inter-RAT info defines the target system for redirected cell selection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT info	MP		Enumerated (GSM)	

## 10.3.7.26 Inter-RAT measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT measurement results	OP	1 to <maxOther RAT>		
>CHOICE <i>system</i>	MP			At least one spare value needed
>>GSM				
>>>Measured GSM cells	MP	1 to <maxReportedGSMCells>		
>>>>GSM carrier RSSI	OP		bit string(6)	RXLEV, [46]. The RSSI bits are numbered b0 to b5, where b0 is the least significant bit.
>>>>Pathloss	OP		Integer(46..158)	In dB
>>>>CHOICE <i>BSIC</i>	MP			
>>>>>Verified BSIC				
>>>>>inter-RAT cell id	MP		Integer(0..<maxCellMeasurements>-1)	
>>>>>Non verified BSIC				
>>>>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
>>>>>>Observed time difference to GSM cell	OP		Observed time difference to GSM cell 10.3.7.52	

## 10.3.7.27 Inter-RAT measurement

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

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

## 10.3.7.28 Inter-RAT measurement event results

This IE contains the measurement event results that are reported to UTRAN for inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT event identity	MP		Inter-RAT event identity 10.3.7.24	
Cells to report	MP	1 to <maxCellMeas>		
>CHOICE <i>BSIC</i>	MP			
>>Verified <i>BSIC</i>				
>>>inter-RAT cell id	MP		Integer(0..<maxCellMeas>-1)	
>>Non verified <i>BSIC</i>				
>>>BCCH ARFCN	MP		Integer (0..1023)	[45]

### 10.3.7.29 Inter-RAT measurement quantity

The quantity the UE shall measure in case of inter-RAT measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement quantity for UTRAN quality estimate	OP		Intra-frequency measurement quantity 10.3.7.38	
CHOICE system	MP			
>GSM				
>>Measurement quantity	MP		Enumerated(GSM Carrier RSSI, Pathloss)	
>>Filter coefficient	MP		Filter coefficient 10.3.7.9	
>>BSIC verification required	MP		Enumerated(required, not required)	
>IS2000				
>>TADD $E_c/I_0$	MP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.6 of TIA/EIA/IS-2000.5
>>TCOMP $E_c/I_0$	MP		Integer(0..15)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>>SOFT SLOPE	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.3 and 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>>ADD_INTERCEPT	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5

Also, this IE must be set to "required" if IE "Observed time difference to GSM cell" in IE "Inter-RAT reporting quantity" is set to "true".

### 10.3.7.30 Inter-RAT measurement reporting criteria

The triggering of the event-triggered reporting for an inter-RAT measurement. All events concerning inter-RAT measurements are labelled 3x where x is a,b,c..

Event 3a: The estimated quality of the currently used UTRAN frequency is below a certain threshold **and** the estimated quality of the other system is above a certain threshold.

Event 3b: The estimated quality of other system is below a certain threshold.

Event 3c: The estimated quality of other system is above a certain threshold.

Event 3d: Change of best cell in other system.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeas Event>		
>Inter-RAT event identity	MP		Inter-RAT event identity 10.3.7.24	
>Threshold own system	CV-clause 0		Integer (-115..0)	
>W	CV-clause 0		Real(0, 0.1..2.0 by step of 0.1)	In event 3a
>Threshold other system	CV-clause 1		Integer (-115..0)	In event 3a, 3b, 3c
>Hysteresis	MP		Integer (0..15)	
>Time to trigger	MP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report.
>Reporting cell status	OP		Reporting cell status 10.3.7.61	

Condition	Explanation
Clause 0	The IE is mandatory <u>present</u> if " Inter-RAT event identity" is set to "3a", otherwise the IE is not needed
Clause 1	The IE is mandatory <u>present</u> if " Inter-RAT event identity" is set to 3a, 3b or 3c, otherwise the IE is not needed

### 10.3.7.31 Inter-RAT measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT cell info list	OP		Inter-RAT cell info list 10.3.7.23	

### 10.3.7.32 Inter-RAT reporting quantity

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UTRAN estimated quality	MP		Boolean	
CHOICE <i>system</i>	MP			
>GSM				
>>Pathloss	MP		Boolean	
>>Observed time difference to GSM cell	MP		Boolean	
>>GSM Carrier RSSI	MP		Boolean	

### 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 <i>Intra-frequency cell removal</i>	OP			
>Remove all intra-frequency cells				No data
>Remove some intra-frequency cells				
>>Removed intra-frequency cells	MP	1 to <maxCellMeas>		
>>>Intra-frequency cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no intra-frequency cells				
New intra-frequency cell	OP	1 to <maxCellMeas>		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	
Cell for measurement	CV- <i>BCHopt</i>	1 to <maxCellMeas>		
>Intra-frequency cell id	MP		Integer(0 .. <maxCellMeas>-1)	

Condition	Explanation
<i>BCHopt</i>	This IE is not needed when sent in SYSTEM INFORMATION. Otherwise, the IE is Optional

10.3.7.34 Intra-frequency event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency event identity	MP		Enumerated (1a,1b,1c,1d, 1e,1f,1g,1h,1i)	

10.3.7.35 Intra-frequency measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency measurement results	OP	1 to <maxCellMeas>		
>Cell measured results	MP		Cell measured results 10.3.7.3	



## 10.3.7.36 Intra-frequency measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency cell info list	OP		Intra-frequency cell info list 10.3.7.33	Measurement object
Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
Intra-frequency reporting quantity	OP		Intra-frequency reporting quantity 10.3.7.41	
Reporting cell status	CV-reporting		Reporting cell status 10.3.7.61	
Measurement validity	OP		Measurement validity 10.3.7.51	
<i>CHOICE report criteria</i>	OP			
>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

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

## 10.3.7.37 Intra-frequency measurement event results

This IE contains the measurement event results that are reported to UTRAN for intra-frequency measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency event identity	MP		Intra-frequency event identity 10.3.7.34	
Cell measurement event results	MP		Cell measurement event results 10.3.7.4	

### 10.3.7.38 Intra-frequency measurement quantity

The quantity the UE shall measure in case of intra-frequency measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Filter coefficient	MP		Filter coefficient 10.3.7.9	
CHOICE <i>mode</i>	MP			
>FDD				
>>Measurement quantity	MP		Enumerated(C PICH Ec/N0, CPICH RSCP, Pathloss, UTRA Carrier RSSI)	If used in Inter system measurement quantity only Ec/N0 and RSCP is allowed. If used in inter-frequency measurement quantity RSSI is not allowed.
>TDD				
>>Measurement quantity list	MP	1 to 4		
>>>Measurement quantity	MP		Enumerated(Pr imary CCPCH RSCP, Pathloss, Timeslot ISCP, UTRA Carrier RSSI)	If used in inter-frequency measurement quantity RSSI is not allowed.

### 10.3.7.39 Intra-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an intra-frequency measurement. All events concerning intra-frequency measurements are labelled 1x where x is a, b, c....

Event 1a: A Primary CPICH enters the Reporting Range (FDD only).

Event 1b: A Primary CPICH leaves the Reporting Range (FDD only).

Event 1c: A Non-active Primary CPICH becomes better than an active Primary CPICH (FDD only).

Event 1d: Change of best cell [Note 1] (FDD only).

Event 1e: A Primary CPICH becomes better than an absolute threshold (FDD only).

Event 1f: A Primary CPICH becomes worse than an absolute threshold (FDD only).

Event 1g: Change of best cell in TDD.

Event 1h: Timeslot ISCP below a certain threshold (TDD only).

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeas Event>		
>Intra-frequency event identity	MP		Intra-frequency event identity 10.3.7.34	
>Triggering condition 1	CV-clause 0		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells)	Indicates which cells can trigger the event
>Triggering condition 2	CV-clause 6		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells, Detected set cells, Detected set cells and monitored set cells)	Indicates which cells can trigger the event
>Reporting Range Constant	CV-clause 2		Real(0..14.5 by step of 0.5)	In dB. In event 1a,1b.
>Cells forbidden to affect Reporting range	CV-clause 1	1 to <maxCellMeas>		In event 1a,1b
>>CHOICE mode	MP			
>>>FDD				
>>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>>TDD				
>>>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57	
>W	CV-clause 2		Real(0.0..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0..7.5 by step of 0.5)	In dB.
>Threshold used frequency	CV-clause 3		Integer (-115..165)	Range used depend on measurement quantity. CPICH RSCP -115..-25 dBm CPICH Ec/No -24..0 dB Pathloss 30..165dB ISCP -115..-25 dBm
>Reporting deactivation threshold	CV-clause 4		Integer(0, 1, 2, 3, 4, 5, 6, 7)	In event 1a Indicates the maximum number of cells allowed in the active set in order for event 1a to occur. 0 means not applicable

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

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

## 10.3.7.40 Intra-frequency measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency measurement identity	MD		Measurement identity 10.3.7.48	The intra-frequency measurement identity has default value 1.
Intra-frequency cell info list	OP		Intra-frequency cell info list 10.3.7.33	
Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
Intra-frequency reporting quantity for RACH Reporting	OP		Intra-frequency reporting quantity for RACH Reporting 10.3.7.42	
Maximum number of reported cells on RACH	OP		Maximum number of reported cells on RACH 10.3.7.43	
Reporting information for state CELL_DCH	OP		Reporting information for state CELL_DCH 10.3.7.62	Note 1

NOTE 1: The reporting of intra-frequency measurements is activated when state CELL\_DCH is entered.

## 10.3.7.41 Intra-frequency reporting quantity

Contains the reporting quantity information for an intra-frequency measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Reporting quantities for active set cells	MP		Cell reporting quantities 10.3.7.5	
Reporting quantities for monitored set cells	MP		Cell reporting quantities 10.3.7.5	
Reporting quantities for detected set cells	OP		Cell reporting quantities 10.3.7.5	

## 10.3.7.42 Intra-frequency reporting quantity for RACH reporting

Contains the reporting quantity information for an intra-frequency measurement report, which is sent on the RACH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SFN-SFN observed time difference reporting indicator	MP		Enumerated( No report, type 1, type 2)	
CHOICE <i>mode</i>	MP			
>FDD				
>>Reporting quantity	MP		Enumerated( CPICH Ec/No, CPICH RSCP, Pathloss, No report)	
>TDD				
>>Reporting quantity list	MP	1 to 2		
>>>Reporting quantity	MP		Enumerated( Timeslot ISCP, Primary CCPCH RSCP, No report)	

#### 10.3.7.43 Maximum number of reported cells on RACH

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Maximum number of reported cells	MP		Enumerated (no report, current cell, current cell + best neighbour, current cell+2 best neighbours, ..., current cell+6 best neighbours)	

#### 10.3.7.44 Measured results

Contains the measured results of the quantity indicated optionally by Reporting Quantity in Measurement Control. "Measured results" can be used for both event trigger mode and periodical reporting mode. The list should be in the order of the value of the measurement quality (the first cell should be the best cell). The "best" FDD cell has the largest value when the measurement quantity is "Ec/No" or "RSCP". On the other hand, the "best" cell has the smallest value when the measurement quantity is "Pathloss". The "best" TDD cell has the largest value when measurement quantity is "Primary CCPCH RSCP".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Measurement</i>	MP			
>Intra-frequency measured results list			Intra-frequency measured results list 10.3.7.35	
>Inter-frequency measured results list			Inter-frequency measured results list 10.3.7.15	
>Inter-RAT measured results list			Inter-RAT measured results list 10.3.7.26	
>Traffic volume measured results list			Traffic volume measured results list 10.3.7.67	
>Quality measured results list			Quality measured results list 10.3.7.55	
>UE Internal measured results			UE Internal measured results 10.3.7.76	
>UE positioning measured results			UE positioning measured results 10.3.7.99	

### 10.3.7.45 Measured results on RACH

Contains the measured results on RACH of the quantity indicated optionally by Reporting Quantity in the system information broadcast on BCH. The list should be in the order of the value of the measurement quality (the first cell should be the best cell). The "best" FDD cell has the largest value when the measurement quantity is "Ec/No" or "RSCP". On the other hand, the "best" cell has the smallest value when the measurement quantity is "Pathloss". The "best" TDD cell has the largest value when measurement quantity is "Primary CCPCH RSCP".

Information Element/group name	Need	Multi	Type and reference	Semantics description
Measurement result for current cell				
CHOICE <i>mode</i>	MP			
>FDD				
>>CHOICE <i>measurement quantity</i>	MP			
>>>CPICH Ec/No			Integer(0..50)	In dB. According to CPICH_Ec/No in [19]
>>>CPICH RSCP			Integer(0..91)	In dBm. According to CPICH_RSCP_LEV in [19]
>>>Pathloss			Integer(46..158)	In dB
>TDD				
>>Timeslot List	OP	1 to 14		
>>>Timeslot ISCP	MP		Timeslot ISCP info 10.3.7.65	The UE shall report the Timeslot ISCP in the same order as indicated in the cell info
>>>Primary CCPCH RSCP	OP		Primary CCPCH RSCP info 10.3.7.54	
Measurement results for monitored cells	OP	1 to 7		
>SFN-SFN observed time difference	OP		SFN-SFN observed time difference 10.3.7.63	It is absent for current cell
>CHOICE <i>mode</i>	MP			
>>FDD				
>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>>CHOICE <i>measurement quantity</i>	OP			It is absent for current cell
>>>>CPICH Ec/No			Integer(-20..0)	In dB. According to CPICH_Ec/No in [19].
>>>>CPICH RSCP			Integer(-115..-40)	In dBm. According to CPICH_RSCP_LEV in [19].
>>>>Pathloss			Integer(46..158)	In dB
>>TDD				
>>>Cell parameters Id	MP		Cell parameters Id 10.3.6.9	
>>>Primary CCPCH RSCP	MP		Primary CCPCH RSCP info 10.3.7.54	

NOTE 1: Monitored cells consist of current cell and neighbouring cells.

### 10.3.7.46 Measurement Command

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement command	MP		Enumerated(Setup, Modify, Release)	



## 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	

## 10.3.7.48 Measurement Identity

A reference number that is used by the UTRAN at modification and release of the measurement, and by the UE in the measurement report.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement identity	MP		Integer(1..16)	

## 10.3.7.49 Measurement reporting mode

Contains the type of Measurement Report transfer mode and the indication of periodical/event trigger.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement Report Transfer Mode	MP		enumerated (Acknowledged mode RLC, Unacknowledged mode RLC)	
Periodical Reporting / Event Trigger Reporting Mode	MP		Enumerated (Periodical reporting, Event trigger)	

### 10.3.7.50 Measurement Type

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement Type	MP		Enumerated(Intra-frequency, Inter-frequency, Inter-RAT, Traffic volume, Quality, UE internal, UE positioning)	

### 10.3.7.51 Measurement validity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE state	MP		Enumerated(CELL_DCH, all states except CELL_DCH, all states)	Indicates the states, in which measurement reporting shall be conducted. The values 'all states except CELL_DCH' and 'all states' are used for measurement type 'traffic volume reporting'.

### 10.3.7.52 Observed time difference to GSM cell

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Observed time difference to GSM cell	OP		Integer(0,,4095)	According to GSM_TIME in [19] and [20]

### 10.3.7.53 Periodical reporting criteria

Contains the periodical reporting criteria information. It is necessary only in the periodical reporting mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Amount of reporting	MD		Integer(1, 2, 4, 8, 16, 32, 64, Infinity)	The default value is infinity.
Reporting interval	MP		Integer(250, 500, 1000, 2000, 3000, 4000, 6000, 8000, 12000, 16000, 20000, 24000, 28000, 32000, 64000)	Indicates the interval of periodical report. Interval in milliseconds

### 10.3.7.53a PLMN identities of neighbour cells

This IE contains the PLMN identities of neighbour cells.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMNs of intra-frequency cells list	OP	1 to <maxCellIM eas>		
>PLMN identity	MD		PLMN identity 10.3.1.11	Default value is the previous "PLMN identity" in the list. The default value for the first PLMN in the list is the identity of the selected PLMN if the "PLMN type" in the variable SELECTED_PLMN has the value "GSM-MAP"; otherwise, the first occurrence is MP.
PLMNs of inter-frequency cells list	OP	1 to <maxCellIM eas>		
>PLMN identity	MD		PLMN identity 10.3.1.11	Default value is the previous "PLMN identity" in the list. The default value for the first PLMN in the list is the identity of the selected PLMN if the "PLMN type" in the variable SELECTED_PLMN has the value "GSM-MAP"; otherwise, the first occurrence is MP.
PLMNs of inter-RAT cells list	OP	1 to <maxCellIM eas>		
>PLMN identity	MD		PLMN identity 10.3.1.11	Default value is the previous "PLMN identity" in the list. The default value for the first PLMN in the list is the identity of the selected PLMN if the "PLMN type" in the variable SELECTED_PLMN has the value "GSM-MAP"; otherwise, the first occurrence is MP.

### 10.3.7.54 Primary CCPCH RSCP info

NOTE: Only for TDD

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Primary CCPCH RSCP	MP		Integer(0..91 )	According to P-CCPCH_RSCP_LEV in [19] and [20]

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 (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)
--	--	--	--	---

10.3.7.55 Quality measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
BLER measurement results	OP	1 to <maxTrCH >		
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	transport channel type = DCH
>DL Transport Channel BLER	OP		Integer (0..63)	According to BLER_LOG in [19] and [20]
CHOICE <i>mode</i>	MP			
>FDD				No data
>TDD				
>>SIR measurement results	OP	1 to <MaxCCTrCH >		SIR measurements for DL CCTrCH
>>>TFCS ID	MP		Integer(1...8)	
>>>Timeslot list	MP	1 to <maxTS>		for all timeslot on which the CCTrCH is mapped on
>>>>SIR	MP		Integer(0..63 )	According to UE_SIR in [20]

## 10.3.7.56 Quality measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Quality reporting quantity	OP		Quality reporting quantity 10.3.7.59	
<i>CHOICE report criteria</i>	MP			
>Quality measurement reporting criteria			Quality measurement reporting criteria 10.3.7.58	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

## 10.3.7.57 Quality measurement event results

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport channels causing the event	OP	1 to <maxTrCH >		
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	transport channel type = DCH

## 10.3.7.58 Quality measurement reporting criteria

Event 5a: Number of bad CRCs on a certain transport channel exceeds a threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH >		
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	transport channel type = DCH
>Total CRC	MP		Integer(1..512)	Number of CRCs
>Bad CRC	MP		Integer(1..512)	Number of CRCs
>Pending after trigger	MP		Integer(1..512)	Number of CRCs

## 10.3.7.59 Quality reporting quantity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Transport Channel BLER	MP		Boolean	TRUE means report requested
Transport channels for BLER reporting	<i>CV-BLER reporting</i>	1 to <maxTrCH >		The default, if no transport channel identities are present, is that the BLER is reported for all downlink transport channels
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	transport channel type = DCH
CHOICE <i>mode</i>	MP			
>FDD				No data
>TDD				
>>SIR measurement list	OP	1 to <maxCCTr CH>		SIR measurements shall be reported for all listed TFCS IDs
>>>TFCS ID	MP		Integer(1..8)	

Condition	Explanation
<i>BLER reporting</i>	This information element is <u>absent_not_needed</u> if 'DL Transport Channel BLER' is 'False' and optional, if 'DL Transport Channel BLER' is 'True'

## 10.3.7.60 Reference time difference to cell

In the System Information message, the reference time difference to cell indicates the timing difference between the primary CCPCH of the current cell and the primary CCPCH of a neighbouring cell..

In the Measurement Control message, the reference time difference to cell indicates the timing difference between UE uplink transmission timing and the primary CCPCH of a neighbouring cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>accuracy</i>	MP			
>40 chips				
>>Reference time difference	MP		Integer(0..38400 by step of 40)	In chips
>256 chips				
>>Reference time difference	MP		Integer(0..38400 by step of 256)	In chips
>2560 chips				
>>Reference time difference	MP		Integer(0..38400 by step of 2560)	In chips

## 10.3.7.61 Reporting Cell Status

Indicates maximum allowed number of cells to report and whether active set cells and/or virtual active set cells and/or monitored set cells on and/or detected set cells used frequency and/or monitored set cells on non used frequency should/should not be included in the IE "Measured results".



Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>reported cell</i>	MP			
>Report cells within active set				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set cells on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within active set and/or monitored set cells on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set and/or detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report all active set cells + cells within monitored set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within monitored set and/or detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	

>Report cells within virtual active set				
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report cells within monitored set on non-used frequency				
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report cells within monitored and/or active set on non-used frequency				
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report all virtual active set cells + cells within monitored set on non-used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report cells within active set or within virtual active set				
>>Maximum number of reported cells	MP		Integer (1..12)	
>Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency				
>>Maximum number of reported cells	MP		Integer(1..12)	

10.3.7.62 Reporting information for state CELL\_DCH

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency reporting quantity	MP		Intra-frequency reporting quantity 10.3.7.41	
Measurement Reporting Mode	MP		Measurement Reporting Mode 10.3.7.49	
CHOICE <i>report criteria</i>	MP			
>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	

## 10.3.7.63 SFN-SFN observed time difference

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>type</i>	MP			
>Type 1			Integer(0..9830399)	According to T1_SFN-SFN_TIME in [19] and [20]
>Type 2			Integer(0..40961)	According to T2_SFN-SFN_TIME in [19] and [20]

## 10.3.7.64 Time to trigger

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Time to trigger	MP		Integer(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	Time in ms

## 10.3.7.65 Timeslot ISCP info

NOTE: Only for TDD

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Timeslot ISCP	MP		Integer (0..91)	According to UE_TS_ISCP_LEV in [20]

## 10.3.7.66 Traffic volume event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume event identity	MP		Enumerated(4a, 4b)	

## 10.3.7.67 Traffic volume measured results list

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

10.3.7.68 Traffic volume measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement Object	OP		Traffic volume measurement Object 10.3.7.70	
Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
Measurement validity	OP		Measurement validity 10.3.7.51	
<i>CHOICE report criteria</i>	MP			
>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.72	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

10.3.7.69 Traffic volume measurement event results

Contains the event result for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink transport channel type causing the event	MP		Enumerated(DCH,RACH,USCH)	USCH is TDD only
UL Transport Channel identity	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	
Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	

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

### 10.3.7.70 Traffic volume measurement object

Contains the measurement object information for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement objects	MP	1 to <maxTrCH >		
>Uplink transport channel type	MP		Enumerated(DCH,RACH, USCH)	USCH is TDD only
>UL Target Transport Channel ID	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	

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

### 10.3.7.71 Traffic volume measurement quantity

Contains the measurement quantity information for a traffic volume measurement.

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

Condition	Explanation
A/V	This IE is <u>mandatory</u> present-when "Average RLC buffer" or "Variance of RLC buffer payload" is chosen and not needed otherwise.

### 10.3.7.72 Traffic volume measurement reporting criteria

Contains the measurement reporting criteria information for a traffic volume measurement.

Event 4a: Transport Channel Traffic Volume [15] exceeds an absolute threshold.

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH >		
>Uplink transport channel type	OP		Enumerated(DCH,RACH, USCH)	USCH is TDD only
>UL Transport Channel ID	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	
>Parameters required for each Event	OP	1 to <maxMeas perEvent>		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	
>>Reporting Threshold	MP		Enumerated(8,16,32,64,128,256,512,1024,2K,3K,4K,6K,8K,12K,16K,24K,32K,48K,64K,96K,128K,192K,256K,384K,512K,768K)	Threshold in bytes And N Kbytes = N*1024 bytes
>>Time to trigger	OP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>>Pending time after trigger	OP		Integer(250, 500, 1000, 2000, 4000, 8000, 16000)	Indicates the period of time during which it is forbidden to send any new measurement reports with the same Traffic volume event identity even if the triggering condition is fulfilled. Time in milliseconds
>>Tx interruption after trigger	OP		Integer (250, 500, 1000, 2000, 4000, 8000, 16000)	Time in milliseconds. Indicates how long the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.

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

10.3.7.73 Traffic volume measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement identity	MD		Measurement identity 10.3.7.48	The traffic volume measurement identity has default value 4.
Traffic volume measurement object	OP		Traffic volume measurement object	

			10.3.7.70	
Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
Measurement validity	OP		Measurement validity 10.3.7.51	
Measurement Reporting Mode	MP		Measurement Reporting Mode 10.3.7.49	
<i>CHOICE reporting criteria</i>	MP			
>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.72	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	

### 10.3.7.74 Traffic volume reporting quantity

Contains the reporting quantity information for a traffic volume measurement.

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RLC Buffer Payload for each RB	MP		Boolean	
Average of RLC Buffer Payload for each RB	MP		Boolean	
Variance of RLC Buffer Payload for each RB	MP		Boolean	

### 10.3.7.75 UE internal event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE internal event identity	MP		Enumerated(6a,6b,6c,6d,6e, 6f, 6g)	



## 10.3.7.76 UE internal measured results

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>UE Transmitted Power	OP		UE Transmitted Power info 10.3.7.85	
>>UE Rx-Tx report entries	OP	1 to <maxRL >		
>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Primary CPICH info for each cell included in the active set
>>>UE Rx-Tx time difference type 1	MP		UE Rx-Tx time difference type 1 10.3.7.83	UE Rx-Tx time difference in chip for each RL included in the active set
>TDD				
>>UE Transmitted Power list	OP	1 to <maxTS >		UE Transmitted Power for each used uplink timeslot in ascending timeslot number order
>>>UE Transmitted Power	MP		UE Transmitted Power info 10.3.7.85	
>>Applied TA	OP		Uplink Timing Advance 10.3.6.95	Uplink timing advance applied by the UE

## 10.3.7.77 UE internal measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE internal measurement quantity	OP		UE internal measurement quantity 10.3.7.79	
UE internal reporting quantity	OP		UE internal reporting quantity 10.3.7.82	
CHOICE <i>report criteria</i>	MP			
>UE internal measurement reporting criteria			UE internal measurement reporting criteria 10.3.7.80	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

<b>CHOICE report criteria</b>	<b>Condition under which the given report criteria is chosen</b>
UE internal measurement reporting criteria	Chosen when UE internal measurement event triggering is required
Periodical reporting criteria	Chosen when periodical reporting is required
No reporting	Chosen when this measurement only is used as additional measurement to another measurement

### 10.3.7.78 UE internal measurement event results

This IE contains the measurement event results that are reported to UTRAN for UE internal measurements.

<b>Information Element/Group name</b>	<b>Need</b>	<b>Multi</b>	<b>Type and reference</b>	<b>Semantics description</b>
UE internal event identity	MP		UE internal event identity 10.3.7.75	
CHOICE mode	MP			
>FDD				
>Primary CPICH info	CV-clause 1		Primary CPICH info 10.3.6.60	
>TDD				(no data)

<b>Condition</b>	<b>Explanation</b>
Clause 1	This IE is mandatory <u>present</u> if "UE internal event identity" is set to "6f" or "6g", otherwise the IE is not needed

### 10.3.7.79 UE internal measurement quantity

The quantity the UE shall measure in case of UE internal measurement.

<b>Information Element/Group name</b>	<b>Need</b>	<b>Multi</b>	<b>Type and reference</b>	<b>Semantics description</b>
CHOICE mode	MP			
>FDD				
>>Measurement quantity	MP		Enumerated(UE Transmitted Power, UTRA Carrier RSSI, UE Rx-Tx time difference)	
>TDD				
>>Measurement quantity	MP		Enumerated(UE Transmitted Power, UTRA Carrier RSSI)	
Filter coefficient	MP		Filter coefficient 10.3.7.9	

### 10.3.7.80 UE internal measurement reporting criteria

The triggering of the event-triggered reporting for a UE internal measurement. All events concerning UE internal measurements are labelled 6x where x is a, b, c.... In TDD, the events 6a - 6d are measured and reported on timeslot basis.

Event 6a: The UE Transmitted Power becomes larger than an absolute threshold

Event 6b: The UE Transmitted Power becomes less than an absolute threshold

Event 6c: The UE Transmitted Power reaches its minimum value

Event 6d: The UE Transmitted Power reaches its maximum value

Event 6e: The UE RSSI reaches the UEs dynamic receiver range

Event 6f: The UE Rx-Tx time difference for a RL included in the active set becomes larger than an absolute threshold

Event 6g: The UE Rx-Tx time difference for a RL included in the active set becomes less than an absolute threshold

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each UE internal measurement event	OP	1 to <maxMeas Event>		
>UE internal event identity	MP		UE internal event identity 10.3.7.75	
>Time-to-trigger	MP		Integer(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	Time in ms. Indicates the period of time between the timing of event detection and the timing of sending Measurement Report.
>UE Transmitted Power Tx power threshold	CV-clause 1		Integer(-50..33)	Power in dBm. In event 6a, 6b.
>UE Rx-Tx time difference threshold	CV-clause 2		Integer(768..1280)	Time difference in chip. In event 6f, 6g.

Condition	Explanation
Clause 1	The IE is mandatory <u>present</u> if UE internal event identity" is set to "6a" or "6b", otherwise the IE is not needed
Clause 2	The IE is mandatory <u>present</u> if "UE internal event identity" is set to "6f" or "6g", otherwise the IE is not needed

### 10.3.7.81 UE internal measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE internal measurement identity	MD		Measurement identity 10.3.7.48	The UE internal measurement identity has default value 5.
UE internal measurement quantity	MP		UE internal measurement quantity 10.3.7.79	

## 10.3.7.82 UE Internal reporting quantity

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE Transmitted Power	MP		Boolean	
CHOICE <i>mode</i>	MP			
>FDD				
>>UE Rx-Tx time difference	MP		Boolean	
>TDD				
>>Applied TA	MP		Boolean	

## 10.3.7.83 UE Rx-Tx time difference type 1

The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time), of the downlink DPCH frame from the measured radio link. This measurement is for FDD only.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE Rx-Tx time difference type 1	MP		Integer(768..1280)	In chips.

## 10.3.7.84 UE Rx-Tx time difference type 2

The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time), of the downlink DPCH frame from the measured radio link.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE Rx-Tx time difference type 2	MP		Real(768.0..1279.9375 by step of 0.0625)	Resolution of 1/16 of a chip.

## 10.3.7.85 UE Transmitted Power info

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
UE Transmitted Power	MP		Integer (0..104)	According to UE_TX_POWER in [19] and [20]

## 10.3.7.86 UE positioning Ciphering info

This IE contains information for the ciphering of UE positioning assistance data broadcast in System Information.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Ciphering Key Flag	MP		Bitstring(1)	See note 1
Ciphering Serial Number	MP		Integer(0..65535)	The serial number used in the DES ciphering algorithm

NOTE 1: The UE always receives two (2) cipher keys during the location update procedure. One of the keys is time-stamped to be current one and the other is time-stamped to be the next one. Thus, the UE always has two cipher keys in memory. The Cipher Key Change Indicator in this broadcast message instructs the UE whether to use current or next cipher key for deciphering the received broadcast message. The UE shall interpret this IE as follows:

- **Ciphering Key Flag**(previous message) = **Ciphering Key Flag**(this message) => Deciphering Key not changed

- **Ciphering Key Flag**(previous message) <> **Ciphering Key Flag**(this message) => Deciphering Key changed

10.3.7.87 UE positioning Error

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Error reason	MP		Enumerated(ER1, ER2, ER3, ER4, ER5, ER6, ER7, ER8)	Note 1
GPS Additional Assistance Data Request	OP		UE positioning GPS Additional Assistance Data Request 10.3.7.88a	

NOTE 1: The following table gives the mapping of the IE "Error reason"

Value	Indication
ER1	There were not enough cells to be received when performing mobile-based OTDOA-IPDL.
ER2	There were not enough GPS satellites to be received, when performing UE-based GPS location.
ER3	Location calculation assistance data missing.
ER4	Requested method not supported.
ER5	Undefined error.
ER6	Location request denied by the user.
ER7	Location request not processed by the user and timeout
ER8	Reference cell for GPS is not the serving cell

10.3.7.88 UE positioning GPS acquisition assistance

This IE contains parameters that enable fast acquisition of the GPS signals in UE-assisted GPS positioning.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE <i>Reference Time</i>	MP			
>UTRAN reference time				GPS Time of Week counted in microseconds, given as GPS TOW in milliseconds and GPS TOW remainder in microseconds, UTRAN reference time = 1000 * GPS TOW msec + GPS TOW rem usec
>>GPS TOW msec	MP		Integer(0..6.048*10 <sup>6</sup> -1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit)
>>GPS TOW rem usec	MP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
>>CHOICE <i>mode</i>				
>>>FDD				
>>>>Primary CPICH Info	OP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>>>TDD				
>>>>cell parameters id	OP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
>>SFN	MP		Integer(0..4095)	
>GPS reference time only				
>>GPS TOW msec	MP		Integer(0..6.048*10 <sup>6</sup> -1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit).
Satellite information	MP	1 to <maxSat>		
>SatID	MP		Integer (0..63)	
>Doppler (0 <sup>th</sup> order term)	MP		Real(-5120..51175 by step of 2.5)	Hz
>Extra Doppler	OP			
>>Doppler (1 <sup>st</sup> order term)	MP		Real (0.966..0.483 by step of 0.023)	Scaling factor 1/42
>>Doppler Uncertainty	MP		Enumerated (12.5,25,50,100,200)	Hz
>Code Phase	MP		Integer(0..1022)	Chips, specifies the centre of the search window
>Integer Code Phase	MP		Integer(0..19)	1023 chip segments
>GPS Bit number	MP		Integer(0..3)	Specifies GPS bit number (20 1023 chip segments)
>Code Phase Search Window	MP		Integer(1023,1,2,3,4,6,8,12,16,24,32,48,64,96,128,192)	Specifies the width of the search window.
>Azimuth and Elevation	OP			
>>Azimuth	MP		Real(0..348.75 by step of 11.25)	Degrees
>>Elevation	MP		Real(0..78.75 by step of 11.25)	Degrees

<b>CHOICE Reference time</b>	<b>Condition under which the given reference time is chosen</b>
UTRAN reference time	The reference time is relating GPS time to UTRAN time (SFN)
GPS reference time only	The time gives the time for which the location estimate is valid

### 10.3.7.88a UE positioning GPS Additional Assistance Data Request

<b>Information Element/Group name</b>	<b>Need</b>	<b>Multi</b>	<b>Type and Reference</b>	<b>Semantics description</b>
Almanac	MP		Boolean	TRUE means requested
UTC Model	MP		Boolean	TRUE means requested
Ionospheric model	MP		Boolean	TRUE means requested
Navigation Model	MP		Boolean	TRUE means requested
DGPS Corrections	MP		Boolean	TRUE means requested
Reference Location	MP		Boolean	TRUE means requested
Reference Time	MP		Boolean	TRUE means requested
Acquisition Assistance	MP		Boolean	TRUE means requested
Real-Time Integrity	MP		Boolean	TRUE means requested
Navigation Model Additional data	CV- <i>Navigation Model</i>			this IE is present only if "Navigation Model" is set to TRUE otherwise it is absent
>GPS Week	MP		Integer (0..1023)	
>GPS_Toe	MP		Integer (0..167)	GPS time of ephemeris in hours of the latest ephemeris set contained by the UE
>T-Toe limit	MP		Integer (0..10)	ephemeris age tolerance of the UE to UTRAN in hours
>Satellites list related data	MP	0 to <maxSat>		
>>SatID	MP		Integer (0..63)	
>>IODE	MP		Integer (0..255)	Issue of Data Ephemeris for SatID

### 10.3.7.89 UE positioning GPS almanac

This IE contains a reduced-precision subset of the ephemeris and clock correction parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
WN <sub>a</sub>	MP		Bit string(8)	
Satellite information	MP	1 to <maxSat>		
>DataID	MP		Integer(0..3)	See [12]
>SatID	MP		Enumerated(0..63)	Satellite ID
>e	MP		Bit string(16)	Eccentricity [12]
>t <sub>oa</sub>	MP		Bit string(8)	Reference Time Ephemeris [12]
>δi	MP		Bit string(16)	
>OMEGADOT	MP		Bit string(16)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles/sec) [12]
>SV Health	MP		Bit string(8)	
>A <sup>1/2</sup>	MP		Bit string(24)	Semi-Major Axis (meters) <sup>1/2</sup> [12]
>OMEGA <sub>0</sub>	MP		Bit string(24)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles) [12]
>M <sub>0</sub>	MP		Bit string(24)	Mean Anomaly at Reference Time (semi-circles) [12]
>ω	MP		Bit string(24)	Argument of Perigee (semi-circles) [12]
>af <sub>0</sub>	MP		Bit string(11)	apparent clock correction [12]
>af <sub>1</sub>	MP		Bit string(11)	apparent clock correction [12]
SV Global Health	OP		Bit string(364)	This enables GPS time recovery and possibly extended GPS correlation intervals. It is specified in page 25 of subframes 4 and 5 [12]

### 10.3.7.90 UE positioning GPS assistance data

This IE contains GPS assistance data.



Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE positioning GPS reference time	OP		UE positioning GPS reference time 10.3.7.96	
UE positioning GPS reference UE position	OP		Ellipsoid point with altitude and uncertainty ellipsoid 10.3.8.4c	A priori knowledge of UE 3-D position.
UE positioning GPS DGPS corrections	OP		UE positioning GPS DGPS corrections 10.3.7.91	
UE positioning GPS navigation model	OP		UE positioning GPS navigation model 10.3.7.94	
UE positioning GPS ionospheric model	OP		UE positioning GPS ionospheric model 10.3.7.92	
UE positioning GPS UTC model	OP		UE positioning GPS UTC model 10.3.7.97	
UE positioning GPS almanac	OP		UE positioning GPS almanac 10.3.7.89	
UE positioning GPS acquisition assistance	OP		UE positioning GPS acquisition assistance 10.3.7.88	
UE positioning GPS real-time integrity	OP		UE positioning GPS real-time integrity 10.3.7.95	

### 10.3.7.90a UE positioning GPS Ephemeris and Clock Correction parameters

This IE contains information for GPS ephemeris and clock correction.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
C/A or P on L2	MP		Bit string(2)	Code(s) on L2 Channel [12]
URA Index	MP		Bit string(4)	User Range Accuracy [12]
SV Health	MP		Bit string(6)	[12]
IODC	MP		Bit string(10)	Issue of Data, Clock [12]
L2 P Data Flag	MP		Bit string(1)	[12]
SF 1 Reserved	MP		Bit string(87)	[12]
TGD	MP		Bit string(8)	Estimated group delay differential [12]
$t_{oc}$	MP		Bit string(16)	apparent clock correction [12]
$af_2$	MP		Bit string(8)	apparent clock correction [12]
$af_1$	MP		Bit string(16)	apparent clock correction [12]
$af_0$	MP		Bit string(22)	apparent clock correction [12]
$C_{rs}$	MP		Bit string(16)	Amplitude of the Sine Harmonic Correction Term to the Orbit Radius (meters) [12]
$\Delta n$	MP		Bit string(16)	Mean Motion Difference From Computed Value (semi-circles/sec) [12]
$M_0$	MP		Bit string(32)	Mean Anomaly at Reference Time (semi-circles) [12]
$C_{uc}$	MP		Bit string(16)	Amplitude of the Cosine Harmonic Correction Term To The Argument Of Latitude (radians) [12]
$e$	MP		Bit string(32)	$c$
$C_{us}$	MP		Bit string(16)	Amplitude of the Sine Harmonic Correction Term To The Argument Of Latitude (radians) [12]
$(A)^{1/2}$	MP		Bit string(32)	Semi-Major Axis (meters) <sup>1/2</sup> [12]
$t_{oe}$	MP		Bit string(16)	Reference Time Ephemeris [12]
Fit Interval Flag	MP		Bit string(1)	[12]
AODO	MP		Bit string(5)	Age Of Data Offset [12]
$C_{ic}$	MP		Bit string(16)	Amplitude of the Cosine Harmonic Correction Term To The Angle Of Inclination (radians) [12]
$\Omega_0$	MP		Bit string(32)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles) [12]
$C_{is}$	MP		Bit string(16)	Amplitude of the Sine Harmonic Correction Term To The Angle Of Inclination (radians) [12]
$i_0$	MP		Bit string(32)	Inclination Angle at Reference Time (semi-circles) [12]
$C_{rc}$	MP		Bit string(16)	Amplitude of the Cosine Harmonic Correction Term to the Orbit Radius (meters) [12]
$\omega$	MP		Bit string(32)	Argument of Perigee (semi-circles) [12]
$\Omega_{dot}$	MP		Bit string(24)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles/sec) [12]
$i_{dot}$	MP		Bit string(14)	Rate of Inclination Angle (semi-circles/sec) [12]

### 10.3.7.91 UE positioning GPS DGPS corrections

This IE contains DGPS corrections to be used by the UE.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
GPS TOW sec	MP		Integer(0..604799)	seconds GPS time-of-week when the DGPS corrections were calculated
Status/Health	MP		Enumerated(UDRE scale 1.0, UDRE scale 0.75, UDRE scale 0.5, UDRE scale 0.3, UDRE scale 0.2, UDRE scale 0.1, no data, invalid data)	
DPGS information	CV- <i>Status/Health</i>	1 to <maxSat>		If the Cipher information is included these fields are ciphered.
>SatID	MP		Enumerated(0..63)	
>IODE	MP		Integer(0..255)	
>UDRE	MP		Enumerated(UDRE ≤ 1.0 m, 1.0m < UDRE ≤ 4.0m, 4.0m < UDRE ≤ 8.0m, 8.0m < UDRE)	The value in this field shall be multiplied by the UDRE Scale Factor in the IE Status/Health to determine the final UDRE estimate for the particular satellite.
>PRC	MP		Real(-655.04..655.04 by step of 0.32)	meters (different from [13])
>RRC	MP		Real(-4.064..4.064 by step of 0.032)	meters/sec (different from [13])
>Delta PRC2	MP		Integer(-127..127)	meters
>Delta RRC2	MP		Real(-0.224..0.224 by step of 0.032)	meters/sec
>Delta PRC3	CV- <i>DCCH</i>		Integer(-127..127)	meters
>Delta RRC3	CV- <i>DCCH</i>		Real(-0.224..0.224 by step of 0.032)	meters/sec

Condition	Explanation
Status/Health	This IE is mandatory present if "status" is not equal to "no data" or "invalid data", otherwise the IE is not needed
DCCH	This IE is mandatory present if the IE "UE positioning GPS DGPS corrections" it is included in the point-to-point message, otherwise it is optional if the IE "UE positioning GPS DGPS corrections" is included in the broadcast message. Otherwise it is not needed.

### 10.3.7.92 UE positioning GPS ionospheric model

The IE contains fields needed to model the propagation delays of the GPS signals through the ionosphere.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
$\alpha_0$	MP		Bit string(8)	Note 1
$\alpha_1$	MP		Bit string(8)	Note 1
$\alpha_2$	MP		Bit string(8)	Note 1
$\alpha_3$	MP		Bit string(8)	Note 1
$\beta_0$	MP		Bit string(8)	Note 2
$\beta_1$	MP		Bit string(8)	Note 2
$\beta_2$	MP		Bit string(8)	Note 2
$\beta_3$	MP		Bit string(8)	Note 2

NOTE 1: The parameters  $\alpha_n$  are the coefficients of a cubic equation representing the amplitude of the vertical delay [12].

NOTE 2: The parameters  $\beta_n$  are the coefficients of a cubic equation representing the period of the ionospheric model [12].

### 10.3.7.93 UE positioning GPS measured results

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE <i>mode</i>				
>FDD				
>>Primary CPICH Info	OP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	OP		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 <sup>8</sup> -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- <i>capability and request</i>		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 <sub>0</sub>	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 <sup>10</sup> -1))	Scale factor 2 <sup>-10</sup>
>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
<i>Capability and request</i>	This field is <u>included only mandatory present</u> if the UE has this capability <i>and</i> if it was requested in the UE positioning reporting quantity <u>and not needed otherwise.</u>

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	$0.5 \leq P < 0.5625$
I	X	Y	$0.5 * (1 + x/8) * 2^y$	$x_{i-1} \leq P < x_i$
62	110	111	112	$104 \leq P < 112$
63	111	111	--	$112 \leq P$

### 10.3.7.94 UE positioning GPS navigation model

This IE contain information required to manage the transfer of precise navigation data to the GPS-capable UE.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Satellite information	MP	1 to <maxSat >		
>SatID	MP		Enumerated(0..63)	Satellite ID
>Satellite Status	MP		Enumerated(NS_NN, ES_SN, ES_NN, REVD)	See note 1
>GPS Ephemeris and Clock Correction parameters	CV-Satellite status		UE positioning GPS Ephemeris and Clock Correction parameters 10.3.7.90a	

NOTE 1: The UE shall interpret enumerated symbols as follows.

Value	Indication
NS_NN	New satellite, new Navigation Model
ES_SN	Existing satellite, same Navigation Model
ES_NN	Existing satellite, new Navigation Model
REVD	Reserved

Condition	Explanation
Satellite status	The IE is present <u>not needed unless if</u> IE "Satellite status" is ES_SN <u>and mandatory present otherwise.</u>

## 10.3.7.95 UE positioning GPS real-time integrity

This IE contains parameters that describe the real-time status of the GPS constellation.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Satellite information	MP	1 to <maxSat >		
>BadSatID	MP		Enumerated(0..63)	

## 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 <sup>8</sup> -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 <i>mode</i>				
>FDD				
>>Primary CPICH Info	OP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	OP		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	

### 10.3.7.97 UE positioning GPS UTC model

The UTC Model field contains a set of parameters needed to relate GPS time to Universal Time Coordinate (UTC).

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
A <sub>1</sub>	MP		Bit string(24)	sec/sec [12]
A <sub>0</sub>	MP		Bit string(32)	seconds [12]
t <sub>ot</sub>	MP		Bit string(8)	seconds [12]
Δt <sub>LS</sub>	MP		Bit string(8)	seconds [12]
WN <sub>t</sub>	MP		Bit string(8)	weeks [12]
WN <sub>LSF</sub>	MP		Bit string(8)	weeks [12]
DN	MP		Bit string(8)	days [12]
Δt <sub>LSF</sub>	MP		Bit string(8)	seconds [12]

### 10.3.7.98 UE positioning IPDL parameters

This IE contains parameters for the IPDL mode. The use of this parameters is described in [29].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
IP spacing	MP		Integer(5,7,10,15,20,30,40,50)	See [29]
IP length	MP		Integer(5,10)	See [29]
IP offset	MP		Integer(0..9)	Relates the BFN and SFN, should be same as T <sub>cell</sub> defined in [10]; See [29]
Seed	MP		Integer(0..63)	See [29]
Burst mode parameters	OP			
>Burst Start	MP		Integer(0..15)	See [29]
>Burst Length	MP		Integer(10..25)	See [29]
>Burst freq	MP		Integer(1..16)	See [29]



## 10.3.7.99 UE positioning measured results

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE positioning OTDOA measured results	OP		UE positioning OTDOA measured results 10.3.7.105	
UE positioning Position estimate info	OP		UE positioning Position estimate info 10.3.7.109	
UE positioning GPS measured results	OP		UE positioning GPS measured results 10.3.7.93	
UE positioning error	OP		UE positioning error 10.3.7.87	Included if UE positioning error occurred

## 10.3.7.100 UE positioning measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE positioning reporting quantity	MP		UE positioning reporting quantity 10.3.7.111	
<i>CHOICE reporting criteria</i>	MP			
>UE positioning reporting criteria			UE positioning reporting criteria 10.3.7.110	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement
UE positioning OTDOA assistance data	CV- OTDOA		UE positioning OTDOA assistance data 10.3.7.103	
UE positioning GPS assistance data	OP		UE positioning GPS assistance data 10.3.7.90	

Condition	Explanation
OTDOA	This IE is mandatory <u>present</u> if the IE "Positioning method" is set to "OTDOA" or "OTDOA or GPS" <u>and not needed otherwise</u> .

### 10.3.7.101 UE positioning measurement event results

This IE contains the measurement event results that are reported to UTRAN for UE positioning measurements.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE <i>Event ID</i>	MP			
>7a				
>>UE positioning Position estimate info	MP		UE positioning Position estimate info 10.3.7.109	
>7b				
>>UE positioning OTDOA measurement	MP		UE positioning OTDOA measurement 10.3.7.105	
>7c				
>>UE positioning GPS measurement	MP		UE positioning GPS measurement 10.3.7.93	

### 10.3.7.102 Void

### 10.3.7.103 UE positioning OTDOA assistance data

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE positioning OTDOA reference cell info	OP		UE positioning OTDOA reference cell info 10.3.7.108	
UE positioning OTDOA neighbour cell list	OP	1 to <maxCellMEAs>		
>UE positioning OTDOA neighbour cell info	MP		UE positioning OTDOA neighbour cell info 10.3.7.106	

### 10.3.7.104 Void

## 10.3.7.105 UE positioning OTDOA measurement

The purpose of the OTDOA Measurement Information element is to provide OTDOA measurements of signals sent from the reference and neighbour cells.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SFN	MP		Integer(0..4095)	SFN during which the last measurement was performed
CHOICE <i>mode</i>				
>FDD				
>>Reference cell id	MP		Primary CPICH info 10.3.6.60	
>>>UE Rx-Tx time difference type 2	MP		UE Rx-Tx time difference type 2 10.3.7.84	
>TDD				(no data)
>>Reference cell id	MP		Cell parameters ID 10.3.6.9	
Neighbours	MP	0 to <maxCellMEas>		
>CHOICE <i>mode</i>	MP			
>>FDD				
>>>Neighbour Identity	MD		Primary CPICH info 10.3.6.60	Default value is the same as in the first set of multiple sets.
>>>>UE Rx-Tx time difference type 2	OP		UE Rx-Tx time difference type 2 10.3.7.84	Included if the neighbour is in the active set
>>TDD				
>>>>Cell and Channel ID	MD		Cell and Channel Identity info 10.3.6.8a	Default value is the same as in the first set of multiple sets.
>UE positioning OTDOA quality	MP		UE positioning OTDOA quality 10.3.7.107	Quality of the measurement from the neighbour cell.
>SFN-SFN observed time difference type 2	MP		SFN-SFN observed time difference 10.3.7.63	Gives the timing relative to the reference cell. Only type 2 is allowed.

## 10.3.7.106 UE positioning OTDOA neighbour cell info

This IE gives approximate cell timing in order to decrease the search window, as well as the cell locations and fine cell timing for UE based OTDOA.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>cell and channel ID	MP		Cell and Channel Identity info 10.3.6.8a	Identifies the channel to be measured on.
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
IPDL parameters	CV-IPDLs		UE positioning IPDL parameters 10.3.7.98	
SFN offset	CV-IPDLs		Integer (0 .. 4095)	Define Tref as the time of beginning of system frame number SFNref of the reference cell. Define Tnc as the beginning of a frame from the neighbour cell occurring immediately after the time Tref. Let the corresponding system frame number be SFNnc. Then SFNnc = SFNref-SFN offset modulo 4096.
SFN-SFN relative time difference	MP		Integer(0.. 38399)	Gives the relative timing compared to the reference cell Equal to $(T_{nc}-T_{ref})/(3.84 \cdot 10^6)$ where $\lfloor \cdot \rfloor$ denotes rounding to the nearest lower integer. in chips.
SFN-SFN drift	OP		Real(0,+0.33,+0.66,+1,+1.33,+1.66,+2,+2.5,+3,+4,+5,+7,+9,+11,+13,+15,-0.33,-0.66,-1,-1.33,-1.66,-2,-2.5,-3,-4,-5,-7,-9,-11,-13,-15)	meters/sec
Search Window Size	MP		Integer(20, 40, 80, 160, 320, 640, 1280, infinity)	in chips. If the value is X then the expected SFN-SFN observed time difference is in the range [RTD-X, RTD+X] where RTD is the value of the field SFN-SFN relative time difference. Infinity means that the uncertainty is larger than 1280 chips.
CHOICE <i>PositioningMode</i>	MP			
>UE based				
>>Cell Position	MD			Default is the same as previous cell
>>>Relative North	OP		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference cell.

>>>Relative East	OP		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference cell.
>>>Relative Altitude	OP		Integer(-4000..4000)	Relative altitude in meters compared to ref. cell.
>>Fine SFN-SFN	MP		Real(0..0.9375 in steps of 0.0625)	Gives finer resolution
>>Round Trip Time	OP		Real(876.00 .. 2923.875) in steps of 0.0625	In chips. Included if cell is in active set.
>UE assisted				(no data)

Condition	Explanation
IPDLs	This IE is <u>mandatory</u> present only if IPDLs are applied and <u>not needed</u> otherwise.

10.3.7.107 UE positioning OTDOA quality

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Std Resolution	MP		Bit string(2)	Std Resolution field includes the resolution used in Std of OTDOA Measurements field. Encoding on two bits as follows: '00' 10 meters '01' 20 meters '10' 30 meters '11' Reserved
Number of OTDOA Measurements	MP		Bit string(3)	Number of measurements field is used together with Std of OTDOA Measurements field to define quality of a reported OTDOA measurement. The field indicates how many OTDOA measurements have been used in the UE to define the standard deviation of the measurements. Following 3 bit encoding is used: '000' 0-4 '001' 5-9 '010' 10-14 '011' 15-24 '100' 25-34 '101' 35-44 '110' 45-54 '111' 55 or more
Std of OTDOA Measurements	MP		Bit string(5)	Std of OTDOA Measurements field includes standard deviation of OTDOA measurements. Following linear 5 bit encoding is used: '00000' 0 - (R*1-1) meters '00001' R*1 – (R*2-1) meters '00010' R*2 – (R*3-1) meters ... '11111' R*31 meters or more where R is the resolution defined by Std Resolution field. E.g. R=20 m corresponds to 0-19 m, 20-39 m,...,620+ m.

## 10.3.7.108 UE positioning OTDOA reference cell info

This IE defines the cell used for time references in all OTDOA measurements.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SFN	OP		Integer (0..4095)	Time stamp (SFN of Reference Cell) of the SFN-SFN relative time differences and SFN-SFN drift rates. Included if any SFN-SFN drift value is included in IE UE positioning OTDOA neighbour cell info.
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>cell and channel ID	MP		Cell and Channel Identity info 10.3.6.8a	Identifies the channel to be measured on.
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information.
CHOICE <i>PositioningMode</i>	MP			
>UE based				
>>CHOICE <i>Cell Position</i>	OP			The position of the antenna that defines the cell. Used for the UE based method.
>>>Ellipsoid				
>>>>Ellipsoid point	MP		Ellipsoid point 10.3.8.4a	
>>>Ellipsoid with altitude				
>>>>Ellipsoid point with altitude	MP		Ellipsoid point with altitude 10.3.8.4b	
>>Round Trip Time	OP		Real(876.00 .. 2923.875) in steps of 0.0625	In chips.
>UE assisted				(no data)
IPDL parameters	OP		UE positioning IPDL parameters 10.3.7.98	If this element is not included there are no idle periods present

## 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 <i>mode</i>				
>FDD				
>>Primary CPICH Info	OP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	OP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
Reference SFN	MP		Integer(0..4095)	The SFN for which the location is valid
GPS TOW msec	CV- <i>Capability and request</i>		Integer(0..6.048*10 <sup>8</sup> -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- <i>Capability and request</i>		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
CHOICE <i>Position estimate</i>	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
<i>Capability and request</i>	This field is <del>included only</del> <u>mandatory present</u> if the UE has this capability <i>and</i> if it was requested in the UE positioning reporting quantity and if the method was UE-based GPS <u>and not needed otherwise</u>

10.3.7.110 UE positioning reporting criteria

The triggering of the event-triggered reporting for an UE positioning measurement.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Parameters required for each event	OP	1 to <maxMeas Event>		
>Amount of reporting	MP		Integer(1, 2, 4, 8, 16, 32, 64,infinite)	
>Report first fix	MP		Boolean	If true the UE reports the position once the measurement control is received, and then each time an event is triggered.
>Measurement interval	MP		Integer(5,15, 60,300,900,1 800,3600,72 00)	Indicates how often the UE should make the measurement In seconds
>CHOICE <i>Event ID</i>	MP			
>>7a				
>>>Threshold Position Change	MP		Integer(10,2 0,30,40,50,1 00,200,300,5 00,1000,200 0,5000,1000 0,20000,500 00,100000)	Indicated how much the position should change compared to last reported position fix in order to trigger the event.
>>7b				
>>>Threshold SFN-SFN change	MP		Real(0.25,0. 5,1,2,3,4,5,1 0,20,50,100, 200,500,100 0,2000,5000 )	Chips. Indicates how much the SFN-SFN measurement of ANY measured cell is allowed to change before the event is triggered.
>>7c				
>>>Threshold SFN-GPS TOW	MP		Integer(1,2,3 ,5,10,20,50,1 00)	Time in ms. When the GPS TOW and SFN timer has drifted apart more than the specified value the event is triggered)

### 10.3.7.111 UE positioning reporting quantity

The purpose of the element is to express the allowed/required location method(s), and to provide information required QoS.



Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Method Type	MP		Enumerated(UE assisted, UE based, UE based is preferred but UE assisted is allowed, UE assisted is preferred but UE based is allowed)	
Positioning Methods	MP		Enumerated(OTDOA, GPS, OTDOA or GPS)	
Response Time	MP		Integer(1,2,4, 8, 16, 32, 64, 128)	in seconds
Accuracy	CV- MethodType		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 <i>OTDOA/GPS Measurement Information Sets</i> . 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
<i>Method Type</i>	The IE is optional if the IE "Method Type" is 'UE assisted'; otherwise it is mandatory <u>present</u>

## 10.3.8 Other Information elements

### 10.3.8.1 BCCH modification info

Indicates modification of the System Information on BCCH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB Value tag	MP		MIB Value tag 10.3.8.9	
BCCH modification time	OP		Integer (0..4088 in step of 8)	All SFN values in which MIB may be mapped are allowed.

### 10.3.8.2 BSIC

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Base transceiver Station Identity Code (BSIC)	MP			[11]
>Network Colour Code (NCC)	MP		bit string(3)	
>Base Station Colour Code (BCC)	MP		bit string(3)	

### 10.3.8.3 CBS DRX Level 1 information

This information element contains the CBS discontinuous reception information to be broadcast for CBS DRX Level 1 calculations in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Period of CTCH allocation (N)	MP		Integer (1..256)	$M_{TTI} \leq N \leq 4096 - K$ , N multiple of $M_{TTI}$
CBS frame offset (K)	MP		Integer (0..255)	$0 \leq K \leq N-1$ , K multiple of $M_{TTI}$

### 10.3.8.4 Cell Value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell Value tag	MP		Integer (1..4)	

#### 10.3.8.4a Ellipsoid point

This IE contains the description of an ellipsoid point as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value ( $N$ ) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ $X$ being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value ( $N$ ) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ $X$ being the longitude in degree (-180°..+180°)

#### 10.3.8.4b Ellipsoid point with Altitude

This IE contains the description of an ellipsoid point with altitude as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value ( $N$ ) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ $X$ being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value ( $N$ ) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ $X$ being the longitude in degree (-180°..+180°)
Altitude Direction	MP		Enumerated (Height, Depth)	
Altitude	MP		Integer (0..2 <sup>15</sup> -1)	The IE value ( $N$ ) is derived by this formula: $N \leq a < N+1$ $a$ being the altitude in metres

#### 10.3.8.4c Ellipsoid point with Altitude and uncertainty ellipsoid

This IE contains the description of an ellipsoid point with altitude and uncertainty ellipsoid as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)
Altitude Direction	MP		Enumerated (Height, Depth)	
Altitude	MP		Integer (0..2 <sup>15</sup> -1)	The IE value (N) is derived by this formula: $N \leq a < N+1$ a being the altitude in metres
Uncertainty semi-major	MP		Integer (0...127)	The uncertainty r is derived from the "uncertainty code" k by $r = 10x(1.1^k - 1)$
Uncertainty semi-minor	MP		Integer (0...127)	The uncertainty r is derived from the "uncertainty code" k by $r = 10x(1.1^k - 1)$
Orientation of major axis	MP		Integer (0..179 by step of 2)	The IE value (N) is derived by this formula: $N \leq a / 2 < N+1$ a being the orientation in degree (0°.. 360°)
Uncertainty Altitude	MP		Integer(0..127)	The uncertainty in altitude, h, expressed in metres is mapped from the IE value (K), with the following formula: $h = C \left( (1 + x)^K - 1 \right)$ with C = 45 and x = 0.025.
Confidence	MP		Integer (0..100)	in percentage

#### 10.3.8.4d Ellipsoid point with uncertainty Circle

This IE contains the description of an ellipsoid point with an uncertainty circle as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)
Uncertainty Code	MP		Integer (0...127)	The uncertainty <i>r</i> is derived from the "uncertainty code" <i>k</i> by $r = 10x(1.1^k - 1)$

#### 10.3.8.4e Ellipsoid point with uncertainty Ellipse

This IE contains the description of an ellipsoid point with an uncertainty ellipse as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)
Uncertainty semi-major	MP		Integer (0...127)	The uncertainty <i>r</i> is derived from the "uncertainty code" <i>k</i> by $r = 10x(1.1^k - 1)$
Uncertainty semi-minor	MP		Integer (0...127)	The uncertainty <i>r</i> is derived from the "uncertainty code" <i>k</i> by $r = 10x(1.1^k - 1)$
Orientation of major axis	MP		Integer (0..179 by step of 2)	The IE value (N) is derived by this formula: $N \leq a / 2 < N+1$ <i>a</i> being the orientation in degree (0°.. 360°)
Confidence	MP		Integer (0..100)	in percentage

#### 10.3.8.5 Inter-RAT change failure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT change failure cause	MP		Enumerated(C onfiguration unacceptable, physical)	At least 3 spare values, criticality = default, are required

			channel failure, protocol error)	
Protocol error information	CV-ProtErr		Protocol error information 10.3.8.12	

Condition	Explanation
ProtErr	The IE is mandatory present if the IE "Inter-RAT handover failure cause" has the value "Protocol error" and not needed otherwise

10.3.8.6 Inter-RAT handover failure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT handover failure cause	MD		Enumerated(C onfiguration unacceptable, physical channel failure, protocol error, inter-RAT protocol error, unspecified)	Default value is "unspecified". At least one spare value needed
Protocol error information	CV-ProtErr		Protocol error information 10.3.8.12	

Condition	Explanation
ProtErr	The IE is mandatory present if the IE "Inter-RAT handover failure cause" has the value "Protocol error" and not needed otherwise

10.3.8.7 Inter-RAT UE radio access capability

This Information Element contains the inter-RAT UE radio access capability that is structured and coded according to the specification used for the corresponding system type.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>system</i>	MP			
>GSM				
>>Mobile Station Classmark 2	MP		Octet string (5)	Defined in [5]
>>>Mobile Station Classmark 3	MP		Octet string (1..32)	Defined in [5]
>cdma2000				
>>cdma2000Message	MP	1.to.<maxl nterSysMe ssages>		
>>>MSG_TYPE(s)	MP		Bitstring (8)	Formatted and coded according to cdma2000 specifications
>>>cdma2000Messagepayload(s)	MP		Bitstring (1..512)	Formatted and coded according to cdma2000 specifications

10.3.8.8 Void

## 10.3.8.8a Inter-RAT UE security capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>system</i>	MP			
>GSM				
>>GSM security capability	MP			The value TRUE means that the indicated ciphering algorithm is supported.
>>>A5/7 supported	MP		Boolean	
>>>A5/6 supported	MP		Boolean	
>>>A5/5 supported	MP		Boolean	
>>>A5/4 supported	MP		Boolean	
>>>A5/3 supported	MP		Boolean	
>>>A5/2 supported	MP		Boolean	
>>>A5/1 supported	MP		Boolean	

## 10.3.8.9 MIB Value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB Value tag	MP		Integer (1..8)	

## 10.3.8.10 PLMN Value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN Value tag	MP		Integer (1..256)	

## 10.3.8.11 Predefined configuration identity and value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5	
Predefined configuration value tag	MP		Predefined configuration value tag 10.3.4.6	

## 10.3.8.12 Protocol error information

This information element contains diagnostics information returned by the receiver of a message that was not completely understood.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>diagnostics type</i>	MP			At least one spare choice is needed.
>Protocol error cause			Protocol error cause 10.3.3.26	

## 10.3.8.13 References to other system information blocks

Information element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP	1 to <maxSIB>		System information blocks for which multiple occurrences are used, may appear more than once in this list
>Scheduling information	MP		Scheduling information, 10.3.8.16	
>SIB type SIBs only	MP		SIB Type SIBs only, 10.3.8.22	

## 10.3.8.14 References to other system information blocks and scheduling blocks

Information element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP	1 to <maxSIB>		System information blocks for which multiple occurrences are used, may appear more than once in this list
>Scheduling information	MP		Scheduling information, 10.3.8.16	
>SIB type	MP		SIB Type, 10.3.8.21	

## 10.3.8.15 Rplmn information

Contains information to provide faster RPLMN selection in the UE.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
GSM BA Range	OP	1 to maxNumGSMFreqRanges		GSM BA Range
>GSM Lower Range (UARFCN)	MP		Integer(0..16383)	Lower bound for range of GSM BA freqs
>GSM Upper Range (UARFCN)	MP		Integer(0..16383)	Upper bound for range of GSM BA freqs
FDD UMTS Frequency list	OP	1 to maxNumFDDFreqs		
>UARFCN (Nlow)	MP		Integer(0..16383)	[21]
>UARFCN (Nupper)	OP		Integer(0..16383)	[21] This IE is only needed when the FDD frequency list is specifying a range.
TDD UMTS Frequency list	OP	1 to maxNumTDDFreqs		
>UARFCN	MP		Integer(0..16383)	[22]
CDMA2000 UMTS Frequency list	OP	1 to maxNumCDMA2000Freqs		
>BAND_CLASS	MP		Bitstring(5 bits)	TIA/EIA/IS-2000. The BAND_CLASS bits are numbered b0 to b4, where b0 is the least significant bit.
>CDMA_FREQ	MP		Bitstring (11 bits)	TIA/EIA/IS-2000. The CDMA_FREQ bits are numbered b0 to b10, where b0 is the least significant bit.

10.3.8.16 Scheduling information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Value tag</i> >PLMN Value tag	OP		PLMN Value tag 10.3.8.10	This IE is included if the following conditions are fulfilled: the area scope for the system information block is set to "PLMN" in table 8.1.1. a value tag is used to indicate changes in the system information block. the SIB type does not equal system information block type 16
>Predefined configuration identity and value tag			Predefined configuration identity and value tag 10.3.8.11	This IE is included if the following conditions are fulfilled: the SIB type equals system information block type 16
>Cell Value tag			Cell Value tag 10.3.8.4	This IE is included if the following conditions are fulfilled: the area scope for the system information block is set to "cell" in table 8.1.1. a value tag is used to indicate changes in the system information block.
>SIB occurrence identity and value tag			SIB occurrence identity and value tag 10.3.8.20b	This IE is included if the following conditions are fulfilled: the SIB type equals system information block types 15.2 and 15.3
Scheduling	MP			
>SEG_COUNT	MD		SEG COUNT 10.3.8.17	Default value is 1
>SIB_REP	MP		Integer (4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096)	Repetition period for the SIB in frames
>SIB_POS	MP		Integer (0 ..Rep-2 by step of 2)	Position of the first segment Rep is the value of the SIB_REP IE
>SIB_POS offset info	MD	1..15		see below for default value
>>SIB_OFF	MP		Integer(2..32 by step of 2)	Offset of subsequent segments

Field	Default value
SIB_POS offset info	The default value is that all segments are consecutive, i.e., that the SIB_OFF = 2 for all segments except when MIB segment/complete MIB is scheduled to be transmitted in between segments from same SIB. In that case, SIB_OFF=4 in between segments which are scheduled to be transmitted at SFNprime = 8 *n-2 and 8*n + 2, and SIB_OFF=2 for the rest of the segments.

## 10.3.8.17 SEG COUNT

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SEG_COUNT	MP		Integer (1..16)	Number of segments in the system information block

## 10.3.8.18 Segment index

Each system information segment has an individual segment index.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Segment index	MP		Integer (1..15)	Segments of a system information block are numbered starting with 0 for the first segment and 1 for the next segment, which can be the first subsequent segment or a last segment.

## 10.3.8.19 SIB data fixed

Contains the result of a master information block or a system information block after encoding and segmentation. The IE is used for segments with fixed length (segments filling an entire transport block).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB data fixed	MP		Bit string (222)	The first bit contains the first bit of the segment.

## 10.3.8.20 SIB data variable

Contains either a complete system information block or a segment of a system information block. Contains the result of a master information block or a system information block after encoding and segmentation. The IE is used for segments with variable length. The system information blocks are defined in clauses 10.2.48.8.1 to 10.2.48.8.18.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB data variable	MP		Bit string (1..214)	The first bit contains the first bit of the segment.

## 10.3.8.20a SIB occurrence identity

This information element identifies a SIB occurrence for System Information Block types 15.2 and 15.3. For System Information Block type 15.2, this identity is assigned to the visible satellite only. Unused identities are claimed by newly rising satellites.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB occurrence identity	MP		Integer (0..15)	

## 10.3.8.20b SIB occurrence identity and value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB occurrence identity	MP		SIB occurrence identity 10.3.8.20a	
SIB occurrence value tag	MP		SIB occurrence value tag 10.3.8.20c	

## 10.3.8.20c SIB occurrence value tag

This information element is used to identify different versions of SIB occurrence for System Information Block types 15.2 and 15.3.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SIB occurrence value tag	MP		Integer(0..15)	

## 10.3.8.21 SIB type

The SIB type identifies a specific system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB type	MP		Enumerated, see below	

The list of values to encode is:

- Master information block,
- System Information Type 1,
- System Information Type 2,
- System Information Type 3,
- System Information Type 4,
- System Information Type 5,
- System Information Type 6,
- System Information Type 7,
- System Information Type 8,
- System Information Type 9,
- System Information Type 10,
- System Information Type 11,
- System Information Type 12,
- System Information Type 13,
- System Information Type 13.1,

- System Information Type 13.2,
- System Information Type 13.3,
- System Information Type 13.4,
- System Information Type 14,
- System Information Type 15,
- System Information Type 15.1,
- System Information Type 15.2,
- System Information Type 15.3,
- System Information Type 15.4,
- System Information Type 16,
- System Information Type 17,
- System Information Type 18,
- Scheduling Block 1,
- Scheduling Block 2.

In addition, at least one spare value, criticality: ignore, is needed.

### 10.3.8.22 SIB type SIBs only

The SIB type identifies a specific system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB type SIBs only	MP		Enumerated, see below	

The list of values to encode is:

- System Information Type 1,
- System Information Type 2,
- System Information Type 3,
- System Information Type 4,
- System Information Type 5,
- System Information Type 6,
- System Information Type 7,
- System Information Type 8,
- System Information Type 9,
- System Information Type 10,
- System Information Type 11,
- System Information Type 12,
- System Information Type 13,

- System Information Type 13.1,
- System Information Type 13.2,
- System Information Type 13.3,
- System Information Type 13.4,
- System Information Type 14,
- System Information Type 15,
- System Information Type 15.1,
- System Information Type 15.2,
- System Information Type 15.3,
- System Information Type 15.4,
- System Information Type 16,
- System Information Type 17,
- System Information Type 18.

In addition, at least one spare value, criticality: ignore, is needed.

### 10.3.9 ANSI-41 Information elements

#### 10.3.9.1 ANSI 41 Core Network Information

Information element/Group name	Need	Multi	Type and reference	Semantics description
P_REV	MP		P_REV 10.3.9.10	
MIN_P_REV	MP		MIN_P_REV 10.3.9.8	
SID	MP		SID 10.3.9.11	
NID	MP		NID 10.3.9.9	

#### 10.3.9.2 ANSI-41 Global Service Redirection information

This Information Element contains ANSI-41 Global Service Redirection information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 Global Service Redirection information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

#### 10.3.9.3 ANSI-41 NAS parameter

This Information Element contains ANSI-41 User Zone Identification information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 NAS parameter	MP		Bit string (size (1..2048))	The first bit contains the first bit of the ANSI-41 information.

#### 10.3.9.4 ANSI-41 NAS system information

This Information Element contains ANSI-41 system information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
NAS (ANSI-41) system information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

#### 10.3.9.5 ANSI-41 Private Neighbour List information

This Information Element contains ANSI-41 Private Neighbour List information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 Private Neighbour List information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

#### 10.3.9.6 ANSI-41 RAND information

This Information Element contains ANSI-41 RAND information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 RAND information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

#### 10.3.9.7 ANSI-41 User Zone Identification information

This Information Element contains ANSI-41 User Zone Identification information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 User Zone Identification information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

#### 10.3.9.8 MIN\_P\_REV

This Information Element contains minimum protocol revision level.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIN_P_REV	MP		Bitstring (8)	Minimum protocol revision level. The MIN_P_REV bits are numbered b0 to b7, where b0 is the least significant bit.

#### 10.3.9.9 NID

This Information Element contains Network identification.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
NID	MP		Bitstring (16)	Network identification. The NID bits are numbered b0 to b15, where b0 is the least significant bit.

### 10.3.9.10 P\_REV

This Information Element contains protocol revision level.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
P_REV	MP		Bitstring (8)	Protocol revision level. The P_REV bits are numbered b0 to b7, where b0 is the least significant bit.

### 10.3.9.11 SID

This Information Element contains System identification.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SID	MP		Bitstring (15)	System identification. The SID bits are numbered b0 to b14, where b0 is the least significant bit.

## 10.3.10 Multiplicity values and type constraint values

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



Constant	Explanation	Value
<b>CN information</b>		
maxCNdomains	Maximum number of CN domains	4
<b>UTRAN mobility information</b>		
maxRAT	Maximum number of Radio Access Technologies	maxOtherRAT + 1
maxOtherRAT	Maximum number of other Radio Access Technologies	15
maxURA	Maximum number of URAs in a cell	8
maxInterSysMessages	Maximum number of Inter System Messages	4
maxRABsetup	Maximum number of RABs to be established	16
<b>UE information</b>		
maxtransactions	Maximum number of parallel RRC transactions in downlink	25
maxPDCPalgoType	Maximum number of PDCP algorithm types	8
maxDRACclasses	Maximum number of UE classes which would require different DRAC parameters	8
maxFreqBandsFDD	Maximum number of frequency bands supported by the UE as defined in [21]	8
maxFreqBandsTDD	Maximum number of frequency bands supported by the UE as defined in [22]	4
maxFreqBandsGSM	Maximum number of frequency bands supported by the UE as defined in [45]	16
maxPage1	Number of UEs paged in the Paging Type 1 message	8
maxSystemCapability	Maximum number of system specific capabilities that can be requested in one message.	16
<b>RB information</b>		
maxPredefConfig	Maximum number of predefined configurations	16
maxRB	Maximum number of RBs	32
maxSRBsetup	Maximum number of signalling RBs to be established	8
maxRBperRAB	Maximum number of RBs per RAB	8
maxRBallRABs	Maximum number of non signalling RBs	27
maxRBMuxOptions	Maximum number of RB multiplexing options	8
maxLoCHperRLC	Maximum number of logical channels per RLC entity	2
<b>TrCH information</b>		
maxTrCH	Maximum number of transport channels used in one direction (UL or DL)	32
maxTrCHpreconf	Maximum number of preconfigured Transport channels, per direction	16
maxCCTrCH	Maximum number of CCTrCHs	8
maxTF	Maximum number of different transport formats that can be included in the Transport format set for one transport channel	32
maxTF-CPCH	Maximum number of TFs in a CPCH set	16
maxTFC	Maximum number of Transport Format Combinations	1024
maxTFCl-1-Combs	Maximum number of TFCI (field 1) combinations	512
maxTFCl-2-Combs	Maximum number of TFCI (field 2) combinations	512
maxCPCHsets	Maximum number of CPCH sets per cell	16
maxSIBperMsg	Maximum number of complete system information blocks per SYSTEM INFORMATION message	16
maxSIB	Maximum number of references to other system information blocks.	32
maxSIB-FACH	Maximum number of references to system information blocks on the FACH	8
<b>PhyCH information</b>		
maxSubCh	Maximum number of sub-channels on PRACH	12
maxPCPCH-APsubCH	Maximum number of available sub-channels for AP signature on PCPCH	12
maxPCPCH-CDsubCH	Maximum number of available sub-channels for CD signature on PCPCH	12
maxSig	Maximum number of signatures on PRACH	16
maxPCPCH-APsig	Maximum number of available signatures for AP on PCPCH	16
maxPCPCH-CDsig	Maximum number of available signatures for CD on PCPCH	16
maxAC	Maximum number of access classes	16
maxASC	Maximum number of access service classes	8
maxASCmap	Maximum number of access class to access service classes mappings	7

maxASCPersist	Maximum number of access service classes for which persistence scaling factors are specified	6
maxPRACH	Maximum number of PRACHs in a cell	16
maxFACHPCH	Maximum number of FACHs and PCHs mapped onto one secondary CCPCHs	8
maxRL	Maximum number of radio links	8
maxSCCPCH	Maximum number of secondary CCPCHs per cell	16
maxDPDCH-UL	Maximum number of DPDCHs per cell	6
maxDPCH-DLchan	Maximum number of channelisation codes used for DL DPCH	8
maxDPCHcodesPerTS	Maximum number of codes for one timeslots (TDD)	16
maxPUSCH	Maximum number of PUSCHs	(8)
maxPDSCH	Maximum number of PDSCHs	8
maxPDSCHcodes	Maximum number of codes for PDSCH	16
maxPDSCH-TFCIgroups	Maximum number of TFCI groups for PDSCH	256
maxPDSCHcodeGroups	Maximum number of code groups for PDSCH	256
maxPCPCHs	Maximum number of PCPCH channels in a CPCH Set	64
maxPCPCH-SF	Maximum number of available SFs on PCPCH	7
maxTS	Maximum number of timeslots used in one direction (UL or DL)	14
HiPUSCHIdentities	Maximum number of PDSCH Identities	64
HiPDSCHIdentities	Maximum number of PDSCH Identities	64
<b>Measurement information</b>		
maxTGPS	Maximum number of transmission gap pattern sequences	6
maxAdditionalMeas	Maximum number of additional measurements for a given measurement identity	4
maxMeasEvent	Maximum number of events that can be listed in measurement reporting criteria	8
maxMeasParEvent	Maximum number of measurement parameters (e.g. thresholds) per event	2
maxMeasIntervals	Maximum number of intervals that define the mapping function between the measurements for the cell quality Q of a cell and the representing quality value	1
maxCellMeas	Maximum number of cells to measure	32
maxReportedGSMCells	Maximum number of GSM cells to be reported	6
maxFreq	Maximum number of frequencies to measure	8
maxSat	Maximum number of satellites to measure	16
HiRM	Maximum number that could be set as rate matching attribute for a transport channel	256
<b>Frequency information</b>		
maxFDDFreqList	Maximum number of FDD carrier frequencies to be stored in USIM	4
maxTDDFreqList	Maximum number of TDD carrier frequencies to be stored in USIM	4
maxFDDFreqCellList	Maximum number of neighbouring FDD cells to be stored in USIM	32
maxTDDFreqCellList	Maximum number of neighbouring TDD cells to be stored in USIM	32
maxGSMCellList	Maximum number of GSM cells to be stored in USIM	32
<b>Other information</b>		
maxNumGSMFreqRanges	Maximum number of GSM Frequency Ranges to store	32
maxNumFDDFreqs	Maximum number of FDD centre frequencies to store	8
maxNumTDDFreqs	Maximum number of TDD centre frequencies to store	8
maxNumCDMA200Freqs	Maximum number of CDMA2000 centre frequencies to store	8

---

# 11 Message and Information element abstract syntax (with ASN.1)

This clause contains definitions for RRC PDUs and IEs using a subset of ASN.1 as specified in [14]. PDU and IE definitions are grouped into separate ASN.1 modules.

## 11.0 General

Some messages and/ or IEs may include one or more IEs with name “dummy” that are included only in the ASN.1. The UE should avoid sending information elements that are named “dummy” to UTRAN. Likewise, UTRAN should avoid sending IEs with name “dummy” to the UE. If the UE anyhow receives an information element named “dummy”, it shall ignore the IE and process the rest of the message as if the IE was not included.

Note An IE with name “dummy” concerns an information element that was (erroneously) included in a previous version of the specification and has been removed by replacing it with a dummy with same type.

If the abstract syntax of an IE is defined using the ASN.1 type "BIT STRING", and this IE corresponds to a functional IE definition in tabular format, in which the significance of bits is semantically defined, the following general rule shall be applied:

The bits in the ASN.1 bit string shall represent the semantics of the functional IE definition in decreasing order of bit significance;

- with the first (or leftmost) bit in the bit string representing the most significant bit; and
- with the last (or rightmost) bit in the bit string representing the least significant bit.

CR-Form-v4

## CHANGE REQUEST

⌘ **25.331 CR 908** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Guidelines concerning conditions, spares, defaults and correction of inconsistencies		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 30-08-2001
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The conditions need to be clarified to reduce ambiguity The guidelines for how to use conditional information elements, spares and defaults are not clear enough. Furthermore, guidelines are missing concerning how to handle inconsistencies when straightforward corrections are not feasible
<b>Summary of change:</b>	⌘ This CR proposes changes in the following areas:  <u>Conditional IEs</u> <ul style="list-style-type: none"> <li>• General error handling for conditional IEs is clarified</li> <li>• The table in 10.1 explaining abbreviations used in the “Need” column aligned to a change in 25.921 in a companion CR</li> <li>• Conditional expressions clarified for numerous IEs, in line with guidelines in 25.921 updated in a companion CR.</li> </ul> <u>Spare values</u> <ul style="list-style-type: none"> <li>• The general error handling and the protocol extension description have been updated in line with guidelines in 25.921 updated in a companion CR</li> </ul> <u>Guidelines for handling inconsistencies when straightforward ASN.1 corrections are not feasible</u> <ul style="list-style-type: none"> <li>• The handling of IEs removed from the ASN.1 by renaming it into “dummy” has been clarified in the ASN.1 section</li> </ul> <u>Isolated impact</u> <ul style="list-style-type: none"> <li>• The CR clarifies possible ambiguities. There is no impact for implementations that have assumed the behaviour proposed in this CR</li> </ul>
<b>Consequences if not approved:</b>	⌘ Inconsistent use of conditions, spare values, defaults and correction of inconsistencies may cause ambiguities. This may again result in inter-operability problems

**Clauses affected:** ⌘ 9.1, 10.1, 10.1.1.1.1, 10.2.7, 10.2.8, 10.2.17, 10.2.26, 10.2.37, 10.2.42, 10.2.48, ⌘

	10.2.48.8.1, 10.2.48.8.8, 10.2.48.8.9, 10.2.48.8.18.3, 10.2.53, 10.2.60, 10.2.61, 10.3.2.1, 10.3.2.3, 10.3.2.5, 10.3.3.5, 10.3.3.7, 10.3.3.14, 10.3.3.19, 10.3.3.21, 10.3.3.21a, 10.3.3.24, 10.3.3.25, 10.3.3.40, 10.3.3.42, 10.3.4.2, 10.3.4.21, 10.3.5.1, 10.3.5.11, 10.3.5.23, 10.3.6.13, 10.3.6.18, 10.3.6.21, 10.3.6.33, 10.3.6.34, 10.3.6.41, 10.3.6.46, 10.3.6.66, 10.3.6.88, 10.3.6.90, 10.3.6.91, 10.3.6.92, 10.3.6.93, 10.3.7.10, 10.3.7.12, 10.3.7.19, 10.3.7.22, 10.3.7.30, 10.3.7.39, 10.3.7.59, 10.3.7.69, 10.3.7.70, 10.3.7.71, 10.3.7.72, 10.3.7.78, 10.3.7.80, 10.3.7.91, 10.3.7.93, 10.3.7.94, 10.3.7.100, 10.3.7.106, 10.3.7.109, 10.3.7.111, 10.3.8.5, 10.3.8.6, 11.0	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 25.331 v3.7.0, CR 907r1
<b>Other comments:</b>	⌘	

**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](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.

---

## 9 Handling of unknown, unforeseen and erroneous protocol data

### 9.1 General

This subclause specifies procedures for the handling of unknown, unforeseen, and erroneous protocol data by the receiving entity. These procedures are called "error handling procedures", but in addition to provide recovery mechanisms for error situations they define a compatibility mechanism for future extensions of the protocol.

The error handling procedures specified in this subclause shall apply to all RRC messages. When there is a specific handling for messages received on different logical channels this is specified.

For system information received on the BCCH, the error handling procedures are applied on the BCCH message SYSTEM INFORMATION, the re-assembled system information segments as well as the system information blocks (including the master information block and the scheduling blocks), with specific error handling as specified below.

When the UE receives an RRC message, it shall set the variable `PROTOCOL_ERROR_REJECT` to `FALSE` and then perform the checks in the order as defined below.

The procedures specified in clause 8 are applied only for the messages passing the checks as defined below, except when procedure specific handling is used to recover from the error.

The error cases specified in the following includes the handling upon reception of spares values. This behaviour also applies in case the actual value of the IE results from mapping the originally sent IE value. Moreover, in certain error cases, as specified in the following, default values apply. In this case, the default values specified within the ASN.1, the tabular and the procedure specifications apply.

---

## 10 Message and information element functional definition and content

### 10.1 General

The function of each Radio Resource Control message together with message contents in the form of a list of information elements is defined in subclause 10.2.

Functional definitions of the information elements are then described in subclause 10.3.

Information elements are marked as either MP - Mandatory present, MD - Mandatory with default value, OP - Optional, CV - Conditional on value or CH - Conditional on history (see Table 10.1 with information extracted from [14]).

Table 10.1: Meaning of abbreviations used in RRC messages and information elements

Abbreviation	Meaning
MP	<p>Mandatory present</p> <p>A value for that information is always needed, and no information is provided about a particular default value. If ever the transfer syntax allows absence (e.g., due to extension), then absence leads to an error diagnosis.</p>
MD	<p>Mandatory with default value</p> <p>A value for that information is always needed, and a particular default value is mentioned (in the 'Semantical information' column). This opens the possibility for the transfer syntax to use absence or a special pattern to encode the default value.</p>
CV	<p>Conditional on value</p> <p><u>The need for a value for that information depends on the value of some other IE or IEs, and/or on the message flow (e.g., channel, SAP). The need is specified by means of a condition, which result may be that the information is mandatory present, mandatory with default value, not needed or optional.</u></p> <p><u>If one of the results of the condition is that the information is mandatory present, the transfer syntax must allow for the presence of the information. If in this case the information is absent an error is diagnosed.</u></p> <p><u>If one of the results of the condition is that the information is mandatory with default value, and a particular default value is mentioned (in the 'Semantical information' column), the transfer syntax may use absence or a special pattern to encode the default value.</u></p> <p><u>If one of the results of the condition is that the information is not needed, the transfer syntax must allow encoding the absence. If in this case the information is present, it will be ignored. In specific cases however, an error may be diagnosed instead. If one of the results of the condition is that the information is optional, the transfer syntax must allow for the presence of the information. In this case, neither absence nor presence of the information leads to an error diagnosis.</u></p> <p><u>A value for that information is needed (presence needed) or unacceptable (absence needed) when some conditions are met that can be evaluated on the sole basis of the content of the message.</u></p> <p><u>If conditions for presence needed are specified, the transfer syntax must allow for the presence of the information. If the transfer syntax allows absence, absence when the conditions for presence are met leads to an error diagnosis.</u></p> <p><u>If conditions for absence needed are specified, the transfer syntax must allow to encode the absence. If the information is present and the conditions for absence are met, an error is diagnosed.</u></p> <p><u>When neither conditions for presence or absence are met, the information is treated as optional, as described for 'OP'.</u></p>
CH	<p>Conditional on history</p> <p><u>The need for a value for that information depends on information obtained in the past (e.g., from messages received in the past from the peer). The need is specified by means of a condition, which result may be that the information is mandatory present, mandatory with default value, not needed or optional.</u></p> <p><u>The handling of the conditions is the same as described for CV.</u></p> <p><u>A value for that information is needed (presence needed) or unacceptable (absence needed) when some conditions are met that must be evaluated on the basis of information obtained in the past (e.g., from messages received in the</u></p>



Abbreviation	Meaning
	<p>past from the other party).</p> <p>If conditions for presence needed are specified, the transfer syntax must allow for the presence of the information. If the transfer syntax allows absence, absence when the conditions for presence are met leads to an error diagnosis.</p> <p>If conditions for absence needed are specified, the transfer syntax must allow to encode the absence. If the information is present and the conditions for absence are met, an error is diagnosed.</p> <p>When neither conditions for presence or absence are met, the information is treated as optional, as described for 'OP'.</p>
OP	<p>Optional</p> <p>The presence or absence is significant and modifies the behaviour of the receiver. However whether the information is present or not does not lead to an error diagnosis.</p>

### 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 10.2.47 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.

### 10.1.1.1 Non-critical extensions

#### 10.1.1.1.1 Extension of an information element with additional values or choices

In future versions of this protocol, non-critical values may be added to choices, enumerated and size constrained types.

For choices, enumerated and size constrained types it is possible to indicate how many non-critical spare values need to be reserved for future extension. ~~The number of spare values is specified within the ASN.1 type definitions; In this case, the tabular format only should indicate that at least one the number of spare values that is needed. Within the ASN.1 spare values should only be used to increase the encoded size of an IE. This means that the ASN.1 should only include spares if the number of spare values that is needed exceeds the number of undefined code points that exist after encoding of the information element. This kind of extension is allowed only for items with need set to OP or MD, and the receiver shall interpret the reception of a spare as absence of the IE and as reception of the default value respectively.~~

For downlink messages, spare values may be defined for non-critical information elements for which the need is specified to be MD or OP (or CV case leading to MD or OP). In this case, a receiver not comprehending the received spare value shall consider the information element to have the default value or consider it to be absent respectively.

For uplink messages spare values may be defined for all information elements, including those for which the need is specified to be MP (or CV case leading to MP).

In all cases at most one spare should be defined for choices. In this case, information elements applicable to the spare choices reserved for future releases of the protocol shall be added to the end of the message.

#### 10.1.1.1.2 Extension of a message with additional information elements

In future versions of this protocol, non-critical information elements may be added to RRC messages. These additional information elements shall be appended at the end of the message; the transfer syntax specified in this revision of the standard facilitates this. A receiver conformant to this revision of the standard shall accept such extension, and proceed as if it was not included.

### 10.1.1.2 Critical extensions

#### 10.1.1.2.1 Extension of an information element with additional values or choices

In versions of this protocol, choices, enumerated and size constrained types may be extended with critical values. For extension with critical values the general critical extension mechanism is used, i.e. for this no spare values are reserved since backward compatibility is not required.

#### 10.1.1.2.2 Extension of a message with additional information elements

In future versions of this protocol, RRC messages may be extended with new information elements. Since messages including critical extensions are rejected by receivers not comprehending them, these messages may be modified completely, e.g. IEs may be inserted at any place and IEs may be removed or redefined.

## 10.2 Radio Resource Control messages

### 10.2.1 ACTIVE SET UPDATE

NOTE: Only for FDD.

This message is used by UTRAN to add, replace or delete radio links in the active set of the UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now".
New U-RNTI	OP		U-RNTI 10.3.3.47	
<b>CN information elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>RB information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>Phy CH information elements</b>				
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing "maximum UL TX power."
<b>Downlink radio resources</b>				
Radio link addition information	OP	1 to <maxRL-1>		Radio link addition information required for each RL to add
>Radio link addition information	MP		Radio link addition information 10.3.6.68	
Radio link removal information	OP	1 to <maxRL>		Radio link removal information required for each RL to remove
>Radio link removal information	MP		Radio link removal information 10.3.6.69	
TX Diversity Mode	MD		TX Diversity Mode 10.3.6.86	Default value is the existing TX diversity mode.
SSDT information	OP		SSDT information 10.3.6.77	

## 10.2.2 ACTIVE SET UPDATE COMPLETE

NOTE: For FDD only.

This message is sent by UE when active set update has been completed.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
<b>RB Information elements</b>				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	
Uplink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

## 10.2.3 ACTIVE SET UPDATE FAILURE

NOTE: Only for FDD.

This message is sent by UE if the update of the active set has failed, e.g. because the radio link is not a part of the active set.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.2.4 ASSISTANCE DATA DELIVERY

This message is sent by UTRAN to convey UE positioning assistance data to the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Measurement Information elements</b>				
UE positioning OTDOA assistance data	OP		UE positioning OTDOA assistance data 10.3.7.103	
UE positioning GPS assistance data	OP		UE positioning GPS assistance data 10.3.7.90	

## 10.2.5 CELL CHANGE ORDER FROM UTRAN

This message is used to order a cell change from UTRA to another radio access technology, e.g., GSM.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
<b>RB Information elements</b>				
RAB information list	OP	1 to <maxRABs etup>		For each RAB to be handed over
>RAB info	MP		RAB info 10.3.4.8	
<b>Other information elements</b>				
Target cell description	MP			
>CHOICE <i>Radio Access Technology</i>	MP			At least one spare choice, Criticality: Reject, is needed.
>>GSM				
>>>BSIC	MP		BSIC 10.3.8.2	
>>>Band Indicator	MP		Enumerated (DCS 1800 band used, PCS 1900 band used)	Indicates how to interpret the BCCH ARFCN
>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
>>>NC mode	OP		Bitstring(3)	[43]
>>IS-2000				

## 10.2.6 CELL CHANGE ORDER FROM UTRAN FAILURE

This message is sent on the RRC connection used before the Cell change order from UTRAN was executed. The message indicates that the UE has failed to seize the new channel in the other radio access technology.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Other information elements</b>				
Inter-RAT change failure	MP		Inter-RAT change failure 10.3.8.5	

## 10.2.7 CELL UPDATE

This message is used by the UE to initiate a cell update procedure.

RLC-SAP: TM

Logical channel: CCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
U-RNTI	MP		U-RNTI 10.3.3.47	
RRC transaction identifier	<i>CV-Failure</i>		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	START value to be used in this CN domain.
AM_RLC error indication(RB2 or RB3)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error [16] occurred on RB2 or RB3 in the UE
AM_RLC error indication(RB>3)	MP		Boolean	TRUE indicates AM_RLC unrecoverable error [16] occurred on RB>3 in the UE
Cell update cause	MP		Cell update cause 10.3.3.3	
Failure cause	OP		Failure cause and error information 10.3.3.14	
RB timer indicator	MP		RB timer indicator 10.3.3.28	
<b>Measurement information elements</b>				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

Condition	Explanation
<i>Failure</i>	This IE is mandatory <u>present</u> if the IE "Failure cause" is present <u>and not needed</u> ; <u>o</u> Otherwise it is absent.

## 10.2.8 CELL UPDATE CONFIRM

This message confirms the cell update procedure and can be used to reallocate new RNTI information for the UE valid in the new cell.

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
U-RNTI	CV-CCCH		U-RNTI 10.3.3.47	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing DRX cycle length coefficient
RLC re-establish indicator (RB2 and RB3)	MP		RLC re-establish indicator 10.3.3.35	
RLC re-establish indicator (RB4 and upwards)	MP		RLC re-establish indicator 10.3.3.35	
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN Information Elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
RB information to release list	OP	1 to <maxRB>		
>RB information to release	MP		RB information to release 10.3.4.19	
RB information to reconfigure list	OP	1 to <maxRB>		
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18	
RB information to be affected list	OP	1 to <maxRB>		
>RB information to be affected	MP		RB information	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			to be affected 10.3.4.17	
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
<i>CHOICE channel requirement</i>				
>Uplink DPCH info	OP		Uplink DPCH info 10.3.6.88.	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
<i>CHOICE mode</i>	MP			
>FDD				
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

Condition	Explanation
CCCH	This IE is mandatory when CCCH is used and ciphering is not required. Otherwise it is absent.

## 10.2.9 COUNTER CHECK

This message is used by the UTRAN to indicate the current COUNT-C MSB values associated to each radio bearer utilising UM or AM RLC mode and to request the UE to compare these to its COUNT-C MSB values and to report the comparison results to UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Presence	Multi	IE type and reference	Semantics description
Message Type	MP			
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	MP		Integrity check info 10.3.3.16	
<b>RB information elements</b>				
RB COUNT-C MSB information	MP	1 to < maxRBallR ABs >		For each RB (excluding signalling radio bearers) using UM or AM RLC.
>RB COUNT-C MSB information	MP		RB COUNT-C MSB information 10.3.4.14	

## 10.2.10 COUNTER CHECK RESPONSE

This message is used by the UE to respond to a COUNTER CHECK message.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Presence	Multi	IE type and reference	Semantics description
Message Type	MP			
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	MP		Integrity check info 10.3.3.16	
<b>RB information elements</b>				
RB COUNT-C information	OP	1 to < maxRBallR ABs >		
>RB COUNT-C information	MP		RB COUNT-C information 10.3.4.15	

## 10.2.11 DOWNLINK DIRECT TRANSFER

This message is sent by UTRAN to transfer higher layer messages.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN -> UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>CN information elements</b>				
CN Domain Identity	MP		Core Network Domain Identity 10.3.1.1	
NAS message	MP		NAS message 10.3.1.8	

## 10.2.12 HANDOVER TO UTRAN COMMAND

This message is sent to the UE via other system to make a handover to UTRAN.

RLC-SAP: N/A (Sent through a different RAT)

Logical channel: N/A (Sent through a different RAT)

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
New U-RNTI	MP		U-RNTI Short 10.3.3.48	
Ciphering algorithm	OP		Ciphering algorithm 10.3.3.4	
<b>CHOICE <i>specification mode</i></b>	MP			
>Complete specification				
<b>RB information elements</b>				
>>Signalling RB information to setup list	MP	1 to <maxSRBs etup>		For each signalling radio bearer established
>>>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
>>RAB information to setup list	OP	1 to <maxRABs etup>		For each RAB established
>>>RAB information for setup	MP		RAB information for setup 10.3.4.10	
<b>Uplink transport channels</b>				
>>UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.24	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH >		
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
<b>Downlink transport channels</b>				
>>DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.6	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH >		
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>Uplink radio resources</b>				
>>Uplink DPCH info	MP		Uplink DPCH info 10.3.6.88	
>>CHOICE <i>mode</i>	MP			
>>>FDD				
>>>>CPCH SET Info	OP		CPCH SET Info 10.3.6.13	



Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Downlink radio resources</b>				
>>>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>>>TDD				(no data)
>>Downlink information common for all radio links	MP		Downlink information common for all radio links 10.3.6.24	
>>Downlink information per radio link	MP	1 to <maxRL>		
>>>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	
>Preconfiguration				
>>CHOICE <i>Preconfiguration mode</i>	MP			
>>>Predefined configuration	MP		Predefined configuration identity 10.3.4.5	
>>>Default configuration				
>>>>Default configuration mode	MP		Enumerated (FDD, TDD)	Indicates whether the FDD or TDD version of the default configuration shall be used
>>>>Default configuration identity	MP		Default configuration identity 10.3.4.0	
>>RAB info	OP		RAB info Post 10.3.4.9	One RAB is established
>>Uplink DPCH info	MP		Uplink DPCH info Post 10.3.6.89	
<b>Downlink radio resources</b>				
>>Downlink information common for all radio links	MP		Downlink information common for all radio links Post 10.3.6.25	
>>Downlink information per radio link	MP	1 to <maxRL>		Send downlink information for each radio link to be set-up. In TDD MaxRL is 1.
>>>Downlink information for each radio link	MP		Downlink information for each radio link Post 10.3.6.28	
>>CHOICE <i>mode</i>	MP			
>>>FDD				(no data)
>>>TDD				
>>>>Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.59	
Frequency info	MP		Frequency info	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			10.3.6.36	
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.39	

### 10.2.13 HANDOVER TO UTRAN COMPLETE

This message is sent by the UE when a handover to UTRAN has been completed.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information elements</b>				
START list	CH	1 to <maxCNdo mains>		START [40] values for all CN domains. The IE is mandatory if it has not been transferred prior to the handover.
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		START 10.3.3.38	
<b>RB Information elements</b>				
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.

### 10.2.14 INITIAL DIRECT TRANSFER

This message is used to initiate a signalling connection based on indication from the upper layers, and to transfer a NAS message.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE -> UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>CN information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	
Intra Domain NAS Node Selector	MP		Intra Domain NAS Node Selector 10.3.1.6	
NAS message	MP		NAS message 10.3.1.8	
<b>Measurement information elements</b>				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

## 10.2.15 HANDOVER FROM UTRAN COMMAND

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
<b>RB information elements</b>				
RAB information list	OP	1 to <maxRABsetup>		For each RAB to be handed over. In this version, the maximum size of the list of 1 shall be applied for all system types.
>RAB info	MP		RAB info 10.3.4.8	
<b>Other information elements</b>				
CHOICE <i>System type</i>	MP			This IE indicates which specification to apply, to decode the transported messages
>GSM				
>>Frequency band	MP		Enumerated (GSM/DCS 1800 band used), GSM/PCS 1900 band used)	
>>GSM message				
>>>Single GSM message	MP		Bitstring (no explicit size constraint)	Formatted and coded according to GSM specifications The first bit of the bitstring contains the first bit of the GSM message.
>>>GSM message List	MP	1.to.<maxlnterSysMessages>	Bitstring (1..512)	Formatted and coded according to GSM specifications. The first bit of the bitstring contains the first bit of the GSM message.
>cdma2000				
>>cdma2000MessageList	MP	1.to.<maxlnterSysMessages>		
>>>MSG_TYPE(s)	MP		Bitstring (8)	Formatted and coded according to cdma2000 specifications. The MSG_TYPE bits are numbered b0 to b7, where b0 is the least significant bit.
>>>cdma2000Messagepayload(s)	MP		Bitstring (1..512)	Formatted and coded according to cdma2000 specifications. The first bit of the bitstring contains the first bit of the cdma2000 message.

## 10.2.16 HANDOVER FROM UTRAN FAILURE

This message is sent on the RRC connection used before the Inter-RAT Handover was executed. The message indicates that the UE has failed to seize the new channel in the other system.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Other information elements</b>				
Inter-RAT handover failure	OP		Inter-RAT handover failure 10.3.8.6	
CHOICE <i>System type</i>	MP			This IE indicates which specification to apply to decode the transported messages
>GSM				
>GSM message List	MP	1.to.<maxlnterSysMessages>	Bitstring (1..512)	Formatted and coded according to GSM specifications. The first bit of the bitstring contains the first bit of the GSM message.
>cdma2000				
>>cdma2000MessageList	MP	1.to.<maxlnterSysMessages>		
>>>MSG_TYPE(s)	MP		Bitstring (8)	Formatted and coded according to cdma2000 specifications. The MSG_TYPE bits are numbered b0 to b7, where b0 is the least significant bit.
>>>cdma2000Messagepayload(s)	MP		Bitstring (1..512)	Formatted and coded according to cdma2000 specifications. The first bit of the bitstring contains the first bit of the cdma2000 message.

## 10.2.17 MEASUREMENT CONTROL

This message is sent by UTRAN to setup, modify or release a measurement in the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Measurement Information elements</b>				
Measurement Identity	MP		Measurement Identity 10.3.7.48	
Measurement Command	MP		Measurement Command 10.3.7.46	
Measurement Reporting Mode	OP		Measurement Reporting Mode 10.3.7.49	
Additional measurements list	OP		Additional measurements list 10.3.7.1	
CHOICE <i>Measurement type</i>	CV-command			
>Intra-frequency measurement			Intra-frequency measurement 10.3.7.36	
>Inter-frequency measurement			Inter-frequency measurement 10.3.7.16	
>Inter-RAT measurement			Inter-RAT measurement 10.3.7.27	
>UE positioning measurement			UE positioning measurement 10.3.7.100	
>Traffic Volume measurement			Traffic Volume measurement 10.3.7.68	
>Quality measurement			Quality measurement 10.3.7.56	
>UE internal measurement			UE internal measurement 10.3.7.77	
<b>Physical channel information elements</b>				
DPCH compressed mode status info	OP		DPCH compressed mode status info 10.3.6.34	

Condition	Explanation
<i>Command</i>	The IE is mandatory present if the "Measurement command" IE is set to "Setup", optional if the "Measurement command" IE is set to "modify", otherwise the IE is not needed.

### 10.2.18 MEASUREMENT CONTROL FAILURE

This message is sent by UE, if it cannot initiate a measurement as instructed by UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.2.19 MEASUREMENT REPORT

This message is used by UE to transfer measurement results to the UTRAN.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>Measurement Information Elements</b>				
Measurement identity	MP		Measurement identity 10.3.7.48	
Measured Results	OP		Measured Results 10.3.7.44	
Measured Results on RACH	OP		Measured Results on RACH 10.3.7.45	
Additional Measured results	OP	1 to <maxAdditionalMeas>		
>Measured Results	MP		Measured Results 10.3.7.44	
Event results	OP		Event results 10.3.7.7	

## 10.2.20 PAGING TYPE 1

This message is used to send information on the paging channel. One or several UEs, in idle or connected mode, can be paged in one message, which also can contain other information.

RLC-SAP: TM

Logical channel: PCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information elements</b>				
Paging record list	OP	1 to <maxPage 1>		
>Paging record	MP		Paging record 10.3.3.23	
<b>Other information elements</b>				
BCCH modification info	OP		BCCH modification info 10.3.8.1	

If the encoded message does not fill a transport block, the RRC layer shall add padding according to subclause 12.1.

## 10.2.21 PAGING TYPE 2

This message is used to page an UE in connected mode, when using the DCCH for CN originated paging.

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Paging cause	MP		Paging cause 10.3.3.22	
<b>CN Information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	
Paging Record Type Identifier	MP		Paging Record Type Identifier 10.3.1.10	



## 10.2.22 PHYSICAL CHANNEL RECONFIGURATION

This message is used by UTRAN to assign, replace or release a set of physical channels used by a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing value of the maximum allowed UL TX power
<i>CHOICE channel requirement</i>				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
>CPCH set ID			CPCH set ID	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			10.3.5.3	
<b>Downlink radio resources</b>				
CHOICE <i>mode</i>	MP			
>FDD				
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

### 10.2.23 PHYSICAL CHANNEL RECONFIGURATION COMPLETE

This message is sent from the UE when a physical channel reconfiguration has been done.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
<b>UE information elements</b>					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17		
CHOICE <i>mode</i>	MP				
>FDD				(no data)	
>TDD					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD	MP				REL-4
>>>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95		
>>>1.28 Mcps TDD				(no data)	REL-4
<b>RB Information elements</b>					
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.	
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13		
Uplink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBall RABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22		
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.	
>>CN domain identity	MP		CN domain identity 10.3.1.1		
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.	

## 10.2.24 PHYSICAL CHANNEL RECONFIGURATION FAILURE

This message is sent by UE if the configuration given by UTRAN is unacceptable or if the UE failed to assign, replace or release a set of physical channel(s).

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message type	MP		Message type	
<b>UE information elements</b>				
RRC transaction identifier	OP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.2.25 PHYSICAL SHARED CHANNEL ALLOCATION

NOTE: Only for TDD.

This message is used by UTRAN to assign physical resources to USCH/DSCH transport channels in TDD, for temporary usage by the UE.

RLC-SAP: UM on SHCCH, UM on DCCH

Logical channel: SHCCH or DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message type	
C-RNTI	OP		C-RNTI 10.3.3.8	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Uplink timing advance Control	MD		Uplink Timing Advance Control 10.3.6.96	Default value is the existing value for uplink timing advance
PUSCH capacity allocation info	OP		PUSCH Capacity Allocation info 10.3.6.64	
PDSCH capacity allocation info	OP		PDSCH Capacity Allocation info 10.3.6.42	
Confirm request	MD		Enumerated( No Confirm, Confirm PDSCH, Confirm PUSCH)	Default value is No Confirm
Traffic volume report request	OP		Integer (0 .. 255)	Indicates the number of frames between start of the allocation period and sending measurement report. The value should be less than the value for Allocation Duration.
ISCP Timeslot list	OP	1 to maxTS		
>Timeslot number	MP		Timeslot number 10.3.6.84	Timeslot numbers, for which the UE shall report the timeslot ISCP in PUSCH CAPACITY REQUEST message.

## 10.2.26 PUSCH CAPACITY REQUEST

NOTE: Only for TDD.

This message is used by the UE for request of PUSCH resources to the UTRAN.

RLC-SAP: TM

Logical channel: SHCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
C-RNTI	OP		C-RNTI 10.3.3.8	
RRC transaction identifier	CV-ProtErr		RRC transaction identifier 10.3.3.36	
Traffic Volume	OP		Traffic Volume, measured results list 10.3.7.67	
Timeslot list	OP	1 to maxTS		
>Timeslot number	MP		Timeslot number 10.3.6.84	
>Timeslot ISCP	MP		Timeslot ISCP info 10.3.7.65	
Primary CCPCH RSCP	OP		Primary CCPCH RSCP info 10.3.7.54	
CHOICE Allocation confirmation	OP			
>PDSCH Confirmation			Integer(1..Hi PDSCHIdentities)	
>PUSCH Confirmation			Integer(1..Hi PUSCHIdentities)	
Protocol error indicator	MD		Protocol error indicator 10.3.3.27	Default value is FALSE
Protocol error information	CV-ProtErr		Protocol error information 10.3.8.12	

Condition	Explanation
<i>ProtErr</i>	This IE is mandatory <u>present</u> if the IE "Protocol error indicator" has the value "TRUE". Otherwise it is not needed.

### 10.2.27 RADIO BEARER RECONFIGURATION

This message is sent from UTRAN to reconfigure parameters related to a change of QoS. This procedure can also change the multiplexing of MAC, reconfigure transport channels and physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN information elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
RAB information to reconfigure list	OP	1 to <maxRABsetup >		
>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11	
RB information to reconfigure list	MP	1to <maxRB>		Although this IE is not always required, need is MP to align with ASN.1
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18	
RB information to be affected list	OP	1 to <maxRB>		
>RB information to be affected	MP		RB information to be affected 10.3.4.17	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel	OP		UL Transport	



Information Element/Group name	Need	Multi	Type and reference	Semantics description
information common for all transport channels			channel information common for all transport channels 10.3.5.24	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
CHOICE <i>mode</i>	MP			
>FDD				
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	MP	1 to <maxRL>		Although this IE is not always required, need is MP to align with ASN.1
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

### 10.2.28 RADIO BEARER RECONFIGURATION COMPLETE

This message is sent from the UE when a RB and signalling link reconfiguration has been done.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
<b>UE information elements</b>					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17		
CHOICE <i>mode</i>	MP				
>FDD				(no data)	
>TDD					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95		
>>>1.28 Mcps TDD				(no data)	REL-4
<b>RB Information elements</b>					
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.	
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13		
Uplink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBall RABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22		
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.	
>>CN domain identity	MP		CN domain identity 10.3.1.1		
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.	

## 10.2.29 RADIO BEARER RECONFIGURATION FAILURE

This message is sent by UE if the configuration given by UTRAN is unacceptable or if the UE failed to establish the physical channel(s).

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	
<b>RB information elements</b>				
Radio bearers for which reconfiguration would have succeeded List	OP	1 to <maxRB>		
>Radio bearer for which reconfiguration would have succeeded	MP		RB identity, 10.3.4.16	

### 10.2.30 RADIO BEARER RELEASE

This message is used by UTRAN to release a radio bearer. It can also include modifications to the configurations of transport channels and/or physical channels. It can simultaneously indicate release of a signalling connection when UE is connected to more than one CN domain.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
Signalling Connection release indication	OP		CN domain identity 10.3.1.1	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB Information Elements</b>				
RAB information to reconfigure list	OP	1 to <maxRABse tup >		
>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11	
RB information to release list	MP	1 to <maxRB>		
>RB information to release	MP		RB information to release 10.3.4.19	
RB information to be affected list	OP	1 to <maxRB>		
>RB information to be affected	MP		RB information to be affected 10.3.4.17	
Downlink counter synchronisation info	OP			

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
<i>CHOICE channel requirement</i>				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
<i>CHOICE mode</i>				
>FDD	MP			
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

### 10.2.31 RADIO BEARER RELEASE COMPLETE

This message is sent from the UE when radio bearer release has been completed.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
<b>UE information elements</b>					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17		
CHOICE <i>mode</i>	MP				
>FDD				(no data)	
>TDD					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95	This information element shall be present in case of handover procedure if timing advance is enabled. Calculated timing advance value for the new cell after handover in a synchronous TDD network	
>>>1.28 Mcps TDD				(no data)	REL-4
<b>RB Information elements</b>					
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.	
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13		
Uplink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22		
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.	
>>CN domain identity	MP		CN domain identity 10.3.1.1		
>>START	MP		START 10.3.3.38	START value to be used in this CN domain.	



## 10.2.32 RADIO BEARER RELEASE FAILURE

This message is sent by UE if the configuration given by UTRAN is unacceptable or if radio bearer cannot be released.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	
<b>RB information elements</b>				
Radio bearers for which reconfiguration would have succeeded	OP	1 to <maxRB>		
>Radio bearer for which reconfiguration would have been succeeded	MP		RB identity, 10.3.4.16	

## 10.2.33 RADIO BEARER SETUP

This message is sent by UTRAN to the UE to establish new radio bearer(s). It can also include modifications to the configurations of transport channels and/or physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB Information Elements</b>				
Signalling RB information to setup list	OP	1 to <maxSRBs etup>		For each signalling radio bearer established
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
RAB information to setup list	OP	1 to <maxRABs etup>		For each RAB established
>RAB information for setup	MP		RAB information for setup 10.3.4.10	
RB information to be affected list	OP	1 to <maxRB>		
>RB information to be affected	MP		RB information to be affected 10.3.4.17	
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall		This IE is needed for each RB having PDCP in the case of

Information Element/Group name	Need	Multi	Type and reference	Semantics description
		RABs>		lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Deleted TrCH information list	OP	1 to <maxTrCH >		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency	Default value is the existing

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			info 10.3.6.36	value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
<i>CHOICE channel requirement</i>				
>Uplink DPCH info	OP		Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
<i>CHOICE mode</i>				
>FDD	MP			
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

## 10.2.34 RADIO BEARER SETUP COMPLETE

This message is sent by UE to confirm the establishment of the radio bearer.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
<b>UE information elements</b>					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17		
CHOICE <i>mode</i>	OP				
>FDD				(no data)	
>TDD					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95	This information element shall be present in case of handover procedure if timing advance is enabled. Calculated timing advance value for the new cell after handover in a synchronous TDD network	
>>>1.28 Mcps TDD				(No data)	REL-4
START	OP		START 10.3.3.38	This information element is not needed for transparent mode RBs	
<b>RB Information elements</b>					
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM.	
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13		
Uplink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22		
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.	
>>CN domain identity	MP		CN domain identity 10.3.1.1		

>>START	MP		START 10.3.3.38	START value to be used in this CN domain.	
---------	----	--	--------------------	---	--

### 10.2.35 RADIO BEARER SETUP FAILURE

This message is sent by UE, if it does not support the configuration given by UTRAN.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	
<b>RB information elements</b>				
Radio bearers for which reconfiguration would have succeeded	OP	1 to <maxRB>		
>Radio bearer for which reconfiguration would have succeeded	MP		RB identity, 10.3.4.16	

### 10.2.36 RRC CONNECTION REJECT

The network transmits this message when the requested RRC connection cannot be accepted.

RLC-SAP: UM

Logical channel: CCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Initial UE identity	MP		Initial UE identity 10.3.3.15	
Rejection cause	MP		Rejection cause 10.3.3.31	
Wait time	MP		Wait time 10.3.3.50	
Redirection info	OP		Redirection info 10.3.3.29	

### 10.2.37 RRC CONNECTION RELEASE

This message is sent by UTRAN to release the RRC connection. The message also releases the signalling connection and all radio bearers between the UE and UTRAN.

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
U-RNTI	<i>CV-CCCH</i>		U-RNTI 10.3.3.47	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	<i>CV-DCCH</i>		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
N308	<i>CH-Cell_DCH</i>		Integer(1..8)	
Release cause	MP		Release cause 10.3.3.32	
<b>Other information elements</b>				
Rplmn information	OP		Rplmn information 10.3.8.15	

Condition	Explanation
<i>CCCH</i>	This IE is <u>mandatory present only sent when CCCH is used and not needed otherwise.</u>
<i>DCCH</i>	This IE is <u>mandatory present only sent when DCCH is used and not needed otherwise.</u>
<i>Cell_DCH</i>	This IE is <u>mandatory present when UE is in CELL_DCH state and not needed otherwise.</u>

## 10.2.38 RRC CONNECTION RELEASE COMPLETE

This message is sent by UE to confirm that the RRC connection has been released.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Error indication	OP		Failure cause and error information 10.3.3.14	

## 10.2.39 RRC CONNECTION REQUEST

RRC Connection Request is the first message transmitted by the UE when setting up an RRC Connection to the network.

RLC-SAP: TM

Logical channel: CCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Initial UE identity	MP		Initial UE identity 10.3.3.15	
Establishment cause	MP		Establishment cause 10.3.3.11	
Protocol error indicator	MD		Protocol error indicator 10.3.3.27	Default value is FALSE
<b>Measurement information elements</b>				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.



## 10.2.40 RRC CONNECTION SETUP

This message is used by the network to accept the establishment of an RRC connection for an UE, including assignment of signalling link information, transport channel information and optionally physical channel information.

RLC-SAP: UM

Logical channel: CCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
Initial UE identity	MP		Initial UE identity 10.3.3.15	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	MP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MP		UTRAN DRX cycle length coefficient 10.3.3.49	
Capability update requirement	MD		Capability update requirement 10.3.3.2	Default value is defined in subclause 10.3.3.2
<b>RB Information Elements</b>				
Signalling RB information to setup list	MP	3 to 4		Information for signalling radio bearers, in the order RB1 up to RB4.
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Added or Reconfigured TrCH information list	MP	1 to <maxTrCH >		Although this IE is not required when the IE "RRC state indicator" is set to "CELL_FACH", need is MP to align with ASN.1
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Added or Reconfigured TrCH information list	MP	1 to <maxTrCH >		Although this IE is not required when the IE "RRC state

Information Element/Group name	Need	Multi	Type and reference	Semantics description
		>		indicator" is set to "CELL_FACH", need is MP to align with ASN.1
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
<i>CHOICE channel requirement</i>				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <MaxRL>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

## 10.2.41 RRC CONNECTION SETUP COMPLETE

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

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

## 10.2.42 RRC STATUS

This message is sent to indicate a protocol error.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Identification of received message	CV- <i>Message identified</i>			
>Received message type	MP		Message Type	
>RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
<b>Other information elements</b>				
Protocol error information	MP		Protocol error information 10.3.8.12	

Condition	Explanation
<i>Message identified</i>	This IE is mandatory <u>present</u> if the IE "Protocol error cause" in the IE "Protocol error information" has any other value than "ASN.1 violation or encoding error" or "Message type non-existent or not implemented" <u>and not needed otherwise.</u>

### 10.2.43 SECURITY MODE COMMAND

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN to UE

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

## 10.2.44 SECURITY MODE COMPLETE

This message is sent by UE to confirm the reconfiguration of ciphering and/or integrity protection.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	MP		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
<b>RB Information elements</b>				
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	

## 10.2.45 SECURITY MODE FAILURE

This message is sent to indicate a failure to act on a received SECURITY MODE CONTROL message.

RLC-SAP: AM

Logical channel: DCCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.2.46 SIGNALLING CONNECTION RELEASE

This message is used to notify the UE that its ongoing signalling connection to a CN domain has been released.

RLC-SAP: AM

Logical channel: DCCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
<b>CN information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	

### 10.2.47 SIGNALLING CONNECTION RELEASE REQUEST

This message is used by the UE to request 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	
<b>UE Information Elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	
<b>CN information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	



## 10.2.48 SYSTEM INFORMATION

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message type	<u>CV-channel1</u> <u>P</u>		Message type	The message type is mandatory on the FACH, and absent on the BCH
SFNprime	<u>CV-channel2</u>		Integer(0..4094 by step of 2)	SFN=SFNprime (for first 10ms frame of 20ms TTI), SFN=SFNprime+1 (for last 10ms frame of 20ms TTI)
<b>CHOICE Segment combination</b>	MP			
>Combination 1				(no data)
>Combination 2				
>>First Segment	MP		First Segment, 10.2.48.1	
>Combination 3				
>>Subsequent Segment	MP		Subsequent Segment, 10.2.48.3	
>Combination 4				
>>Last segment	MP		Last segment (short), 10.2.48.5	
>Combination 5				
>>Last segment	MP		Last Segment (short) 10.2.48.5	
>>First Segment	MP		First Segment (short), 10.2.48.2	
>Combination 6				
>>Last Segment	MP		Last Segment (short), 10.2.48.5	
>>Complete list	MP	1 to maxSIBper Msg		Note 1
>>>Complete	MP		Complete SIB (short), 10.2.48.7	
>Combination 7				
>>Last Segment	MP		Last Segment (short), 10.2.48.5	
>>Complete list	MP	1..< maxSIBper Msg>		Note 1
>>>Complete	MP		Complete SIB (short), 10.2.48.7	
>>First Segment	MP		First Segment (short), 10.2.48.2	
>Combination 8				
>>Complete list	MP	1 to maxSIBper Msg		Note 1

>>>Complete	MP		Complete SIB (short),10.2.48.7	
>Combination 9				
>>Complete list	MP	1..MaxSIB perMsg		Note 1
>>>Complete	MP		Complete SIB (short),10.2.48.7	
>>First Segment	MP		First Segment (short), 10.2.48.2	
>Combination 10				
>>>Complete SIB of size 215 to 226	MP		Complete SIB,10.2.48.6	
>Combination 11				
>>Last segment of size 215 to 222	MP		Last segment,10.2.48.4	

Condition	Explanation
<i>channel1</i>	The IE is mandatory present if the message is sent on the FACH and not needed otherwise.
<i>channel2</i>	This IE is mandatory present if the channel is BCH, otherwise it is not neededabsent.

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1. Padding is needed e.g. if the remaining space is insufficient to start a new First Segment (which requires several bits for SIB type, SEG\_COUNT and SIB data).

NOTE 1: If Combination 6 - 9 contains a Master information block Master information shall be located as the first IE in the list.

### 10.2.48.1 First Segment

This segment type is used to transfer the first segment of a segmented system information block. The IE is used when the first segment fills the entire transport block (Combination 2).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
SEG_COUNT	MP		SEG COUNT, 10.3.8.17	
SIB data fixed	MP		SIB data fixed, 10.3.8.19	

### 10.2.48.2 First Segment (short)

This segment type is used to transfer the first segment of a segmented system information block. The IE is used when the first segment is concatenated after other segments in a transport block (Combination 5, 7 and 9).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
SEG_COUNT	MP		SEG COUNT, 10.3.8.17	
SIB data variable	MP		SIB data variable, 10.3.8.20	

### 10.2.48.3 Subsequent Segment

This segment type is used to transfer a subsequent segment of a segmented system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
Segment index	MP		Segment Index, 10.3.8.18	
SIB data fixed	MP		SIB data fixed, 10.3.8.19	

### 10.2.48.4 Last Segment

This segment type is used to transfer the last segment of a segmented system information block. The IE is used when the last segment has a length, excluding length denominator, from 215 through 222 (Combination 11).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
Segment index	MP		Segment Index, 10.3.8.18	
SIB data fixed	MP		SIB data fixed, 10.3.8.19	In case the SIB data is less than 222 bits, padding shall be used. The same padding bits shall be used as defined in clause 12.1

### 10.2.48.5 Last Segment (short)

This segment type is used to transfer the last segment of a segmented system information block. The IE is used when the last segment has a length, excluding length denominator, of upto 214 bits (Combination 4, 5, 6 and 7).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
Segment index	MP		Segment Index, 10.3.8.18	
SIB data variable	MP		SIB data variable, 10.3.8.20	

### 10.2.48.6 Complete SIB

This segment type is used to transfer a non-segmented system information block. The IE is used when the complete SIB has a length, excluding length denominator, from 215 through 226 (Combination 10).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
SIB data fixed	MP		Bit string (226)	In case the SIB data is less than 226 bits, padding shall be used. The same padding bits shall be used as defined in clause 12.1

### 10.2.48.7 Complete SIB (short)

This segment type is used to transfer a non-segmented system information block. The IE is used when the complete SIB has a length, excluding length denominator, of upto 214 bits (Combination 6, 7, 8 and 9).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
SIB type	MP		SIB Type, 10.3.8.21	
SIB data variable	MP		SIB data variable, 10.3.8.20	

### 10.2.48.8 System Information Blocks

The IE "SIB data" within the IEs, "First Segment", "Subsequent or last Segment" and "Complete SIB" contains either complete system information block or a segment of a system information block. The actual system information blocks are defined in the following clauses.

10.2.48.8.1 Master Information Block

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
MIB Value tag	MP		MIB Value tag 10.3.8.9	
<b>CN information elements</b>				
Supported PLMN types	MP		PLMN Type 10.3.1.12	
PLMN Identity	CV-GSM		PLMN Identity 10.3.1.11	
<b>ANSI-41 information elements</b>				
ANSI-41 Core Network Information	CV-ANSI-41		ANSI-41 Core Network Information 10.3.9.1	
References to other system information blocks and scheduling blocks	MP		References to other system information blocks and scheduling blocks 10.3.8.14	

Condition	Explanation
GSM	The IE is mandatory <u>present</u> if the IE "Supported PLMN Types" is set to 'GSM-MAP' or 'GSM-MAP AND ANSI-41', and not needed otherwise
ANSI-41	The IE is mandatory <u>present</u> if the IE "Supported PLMN Types" is set to 'ANSI-41' or 'GSM-MAP AND ANSI-41', and not needed otherwise

10.2.48.8.2 Scheduling Block 1

Information Element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP		References to other system information blocks 10.3.8.13	

10.2.48.8.3 Scheduling Block 2

Information Element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP		References to other system information blocks 10.3.8.13	

## 10.2.48.8.4 System Information Block type 1

The system information block type 1 contains NAS system information as well as UE timers and counters to be used in idle mode and in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>CN information elements</b>				
CN common GSM-MAP NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
CN domain system information list	MP	1 to <maxCNdo mains>		Send CN information for each CN domain.
>CN domain system information	MP		CN domain system information 10.3.1.2	
<b>UE information</b>				
UE Timers and constants in idle mode	MD		UE Timers and constants in idle mode 10.3.3.44	Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.44 apply and - For parameters with need OP, the parameters are absent
UE Timers and constants in connected mode	MD		UE Timers and constants in connected mode 10.3.3.43	Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.43 apply and - For parameters with need OP, the parameters are absent

## 10.2.48.8.5 System Information Block type 2

The system information block type 2 contains the URA identity.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>UTRAN mobility information elements</b>				
URA identity list	MP	1 ..<maxURA>		
>URA identity	MP		URA identity 10.3.2.6	

## 10.2.48.8.6 System Information Block type 3

The system information block type 3 contains parameters for cell selection and re-selection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB4 Indicator	MP		Boolean	TRUE indicates that SIB4 is broadcast in the cell.
<b>UTRAN mobility information elements</b>				
Cell identity	MP		Cell identity 10.3.2.2	
Cell selection and re-selection info	MP		Cell selection and re-selection info for SIB3/4 10.3.2.3	
Cell Access Restriction	MP		Cell Access Restriction 10.3.2.1	

10.2.48.8.7 System Information Block type 4

The system information block type 4 contains parameters for cell selection and re-selection to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>UTRAN mobility information elements</b>				
Cell identity	MP		Cell identity 10.3.2.2	
Cell selection and re-selection info	MP		Cell selection and re-selection info for SIB3/4 10.3.2.3	
Cell Access Restriction	MP		Cell Access Restriction 10.3.2.1	

10.2.48.8.8 System Information Block type 5

The system information block type 5 contains parameters for the configuration of the common physical channels in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB6 Indicator	MP		Boolean	TRUE indicates that SIB6 is broadcast in the cell.
<b>PhyCH information elements</b>				
PICH Power offset	MP		PICH Power offset 10.3.6.50	
CHOICE <i>mode</i>	MP			
>FDD				
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	This AICH Power offset also indicates the power offset for AP-AICH and for CD/CA-ICH.
>TDD				
>>PUSCH system information	OP		PUSCH system information 10.3.6.66	
>>PDSCH system information	OP		PDSCH system information 10.3.6.46	
>>TDD open loop power control	MP		TDD open loop power control 10.3.6.79	
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.57	Note 1
PRACH system information list	MP		PRACH system information list 10.3.6.55	
Secondary CCPCH system information	MP		Secondary CCPCH system information 10.3.6.72	
CBS DRX Level 1 information	CV-CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory <u>present</u> if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed in the message

10.2.48.8.9 System Information Block type 6

The system information block type 6 contains parameters for the configuration of the common and shared physical channels to be used in connected mode.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
PICH Power offset	MP		PICH Power offset 10.3.6.50	
CHOICE <i>mode</i>	MP			
>FDD				
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	This AICH Power offset also indicates the power offset for AP-AICH and for CD/CA-ICH.
>TDD				
>>PUSCH system information	OP		PUSCH system information 10.3.6.66	
>>PDSCH system information	OP		PDSCH system information 10.3.6.46	
>>TDD open loop power control	MP		TDD open loop power control 10.3.6.79	
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.57	Note 1
PRACH system information list	OP		PRACH system information list 10.3.6.55	
Secondary CCPCH system information	OP		Secondary CCPCH system information 10.3.6.72	
CBS DRX Level 1 information	CV-CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory <u>present</u> if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed

### 10.2.48.8.10 System Information Block type 7

The system information block type 7 contains the fast changing parameters UL interference and Dynamic persistence level.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>UL interference	MP		UL interference 10.3.6.87	
>TDD				(no data)
<b>PhyCH information elements</b>				
PRACHs listed in system information block type 5	MP	1 to <maxPRACH>		The order of the PRACHs is the same as in system information block type 5.
>Dynamic persistence level	MP		Dynamic persistence level 10.3.6.35	
PRACHs listed in system information block type 6	OP	1 to <maxPRA CH>		The order of the PRACHs is the same as in system information block type 6.
>Dynamic persistence level	MP		Dynamic persistence level 10.3.6.35	
Expiration Time Factor	MD		Expiration Time Factor 10.3.3.12	Default is 1.

#### 10.2.48.8.11 System Information Block type 8

NOTE: Only for FDD.

The system information block type 8 contains static CPCH information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>UE information</b>				
CPCH parameters	MP		CPCH parameters 10.3.3.7	
<b>PhyCH information elements</b>				
CPCH set info list	MP	1 to <maxCPC Hsets>		
>CPCH set info	MP		CPCH set info 10.3.6.13	
CSICH Power offset	MP		CSICH Power offset 10.3.6.15	

#### 10.2.48.8.12 System Information Block type 9

NOTE: Only for FDD.

The system information block type 9 contains CPCH information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
CPCH set persistence levels list	MP	..1 to <maxCPC Hsets>		
>CPCH set persistence levels	MP		CPCH persistence levels 10.3.6.12	

#### 10.2.48.8.13 System Information Block type 10

NOTE: Only for FDD.

The system information block type 10 contains information to be used by UEs having their DCH controlled by a DRAC procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>UE information</b>				
DRAC system information	MP		DRAC system information 10.3.3.9	DRAC information is sent for each class of terminal

#### 10.2.48.8.14 System Information Block type 11

The system information block type 11 contains measurement control information to be used in the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB12 Indicator	MP		Boolean	TRUE indicates that SIB12 is broadcast in the cell.
<b>Measurement information elements</b>				
FACH measurement occasion info	OP		FACH measurement occasion info 10.3.7.8	
Measurement control system information	MP		Measurement control system information 10.3.7.47	

#### 10.2.48.8.15 System Information Block type 12

The system information block type 12 contains measurement control information to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Measurement information elements</b>				
FACH measurement occasion info	OP		FACH measurement occasion info 10.3.7.8	
Measurement control system information	MP		Measurement control system information 10.3.7.47	

#### 10.2.48.8.16 System Information Block type 13

The system information block type 13 contains ANSI-41 system information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>Other information elements</b>				
<b>CN Information Elements</b>				
CN Domain system information list	MP	1 to <maxCNdo mains>		Send CN information for each CN domain.
>CN Domain system information	MP		CN Domain system information 10.3.1.2	
<b>UE Information</b>				
UE timers and constants in idle mode	OP		UE timers and constants in idle mode 10.3.3.44	
Capability update requirement	MD		Capability update requirement 10.3.3.2	Default value is defined in subclause 10.3.3.2

#### 10.2.48.8.16.1 System Information Block type 13.1

The system information block type 13.1 contains the ANSI-41 RAND information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>ANSI-41 information elements</b>				
ANSI-41 RAND information	MP		ANSI-41 RAND information 10.3.9.6	

#### 10.2.48.8.16.2 System Information Block type 13.2

The system information block type 13.2 contains the ANSI-41 User Zone Identification information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>ANSI-41 information elements</b>				
ANSI-41 User Zone Identification information	MP		ANSI-41 User Zone Identification information 10.3.9.7	

## 10.2.48.8.16.3 System Information Block type 13.3

The system information block type 13.3 contains the ANSI-41 Private Neighbour List information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>ANSI-41 information elements</b>				
ANSI-41 Private Neighbour List information	MP		ANSI-41 Private Neighbour List information 10.3.9.5	

## 10.2.48.8.16.4 System Information Block type 13.4

The system information block type 13.4 contains the ANSI-41 Global Service Redirection information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>ANSI-41 information elements</b>				
ANSI-41 Global Service Redirection information	MP		ANSI-41 Global Service Redirection information 10.3.9.2	

## 10.2.48.8.17 System Information Block type 14

NOTE: Only for TDD.

The system information block type 14 contains parameters for common and dedicated physical channel uplink outer loop power control information to be used in both idle and connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
Individual Timeslot interference list	MP	1 to <maxTS>		
>Individual Timeslot interference	MP		Individual Timeslot interference 10.3.6.38	
Expiration Time Factor	MD		Expiration Time Factor 10.3.3.12	Default is 1.

## 10.2.48.8.18 System Information Block type 15

The system information block type 15 contains information useful for UE-based or UE-assisted positioning methods.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
GPS Data ciphering info	OP		UE positioning Cipher info 10.3.7.86	If this IE is present then the SIB types 15.1, 15.2 & 15.3 are ciphered in accordance with the Data Assistance Ciphering Algorithm specified in [18]
Reference position	MP		Ellipsoid point with altitude and uncertainty ellipsoid 10.3.8.4c	approximate position where the UE is located
GPS Reference Time	MP		UE positioning GPS reference time 10.3.7.96	
Satellite information	OP	1 to <maxSat>		This IE is present whenever bad (failed/failing) satellites are detected by UTRAN [18].
>BadSatID	MP		Enumerated(0..63)	

#### 10.2.48.8.18.1 System Information Block type 15.1

The system information block type 15.1 contains information useful for UE positioning DGPS Corrections. The DGPS Corrections message contents are based on a Type-1 message of DGPS specified in [13].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
DGPS corrections	MP		UE positioning GPS DGPS corrections 10.3.7.91	

#### 10.2.48.8.18.2 System Information Block type 15.2

The system information block type 15.2 contains information useful for GPS Navigation Model. These IE fields are based on information extracted from the subframes 1 to 3 of the GPS navigation message [12].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Transmission TOW	MP		Integer (0..604799)	The approximate GPS time-of-week when the message is broadcast. in seconds
SatID	MP		Enumerated(0..63)	Satellite ID
GPS Ephemeris and Clock Correction Parameters	MP		UE positioning GPS Ephemeris and Clock Correction parameters 10.3.7.90a	

## 10.2.48.8.18.3 System Information Block type 15.3

The system information block type 15.3 contains information useful for ionospheric delay, UTC offset, and Almanac. These IEs contain information extracted from the subframes 4 and 5 of the GPS navigation message, [12].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Transmission TOW	MP		Integer (0..604799)	The approximate GPS time-of-week when the message is broadcast. in seconds
GPS Almanac and Satellite Health	OP		UE positioning GPS almanac 10.3.7.89	
GPS ionospheric model	OP		UE positioning GPS ionospheric model 10.3.7.92	
GPS UTC model	OP		UE positioning GPS UTC model 10.3.7.97	
SatMask	CV- <i>Almanac</i>		Bitstring(1..32)	indicates the satellites that contain the pages being broadcast in this data set
LSB TOW	CV- <i>Almanac</i>		Bit string(8)	

Condition	Explanation
<i>Almanac</i>	This IE is <u>mandatory</u> present if the IE "GPS Almanac and Satellite Health" is present

## 10.2.48.8.18.4 System Information Block type 15.4

The system information block type 15.4 contains information useful for OTDOA based UE Positioning method.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
OTDOA Data ciphering info	OP		UE positioning Ciphering info 10.3.7.86	If this IE is present then the IE "OTDOA Assistance Data" is ciphered in accordance with the Data Assistance Ciphering Algorithm specified in [18]
OTDOA assistance data	MP		UE positioning OTDOA assistance data 10.3.7.103	

## 10.2.48.8.19 System Information Block type 16

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

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
<b>RB information elements</b>				
Predefined RB configuration	MP		Predefined RB configuration 10.3.4.7	
<b>TrCH Information Elements</b>				
Predefined TrCH configuration	MP		Predefined TrCH configuration 10.3.5.9	
<b>PhyCH Information Elements</b>				
Predefined PhyCH configuration	MP		Predefined PhyCH configuration 10.3.6.56	

#### 10.2.48.8.20 System Information Block type 17

NOTE: Only for TDD.

The system information block type 17 contains fast changing parameters for the configuration of the shared physical channels to be used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<b>PhyCH information elements</b>				
PUSCH system information	OP		PUSCH system information 10.3.6.66	
PDSCH system information	OP		PDSCH system information 10.3.6.46	

#### 10.2.48.8.21 System Information Block type 18

The System Information Block type 18 contains PLMN identities of neighbouring cells to be considered in idle mode as well as in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Idle mode PLMN identities	OP		PLMN identities of neighbour cells 10.3.7.53a	
Connected mode PLMN identities	OP		PLMN identities of neighbour cells 10.3.7.53a	

### 10.2.49 SYSTEM INFORMATION CHANGE INDICATION

This message is used to send information on FACH to the UEs in state CELL\_FACH about coming modification of the system information.

RLC-SAP: TM



Logical channel: BCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>Other information elements</b>				
BCCH modification info	MP		BCCH modification info 10.3.8.1	

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.

### 10.2.50 TRANSPORT CHANNEL RECONFIGURATION

This message is used by UTRAN to configure the transport channel of a UE. This also includes a possible reconfiguration of physical channels. The message can also be used to assign a TFC subset and reconfigure physical channel.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
<b>TrCH Information Elements</b>				
<b>Uplink transport channels</b>				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.3	
>>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >		
>>>DRAC static information	MP		DRAC static information 10.3.5.7	
>TDD				(no data)
<b>Downlink transport channels</b>				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
<b>PhyCH information elements</b>				
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
<b>Uplink radio resources</b>				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power
CHOICE <i>channel requirement</i>	OP			
>Uplink DPCH info			Uplink DPCH info 10.3.6.88	
>CPCH SET Info			CPCH SET Info 10.3.6.13	
<b>Downlink radio resources</b>				
CHOICE <i>mode</i>	MP			
>FDD				
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.30	
>TDD				(no data)
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24	
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	

## 10.2.51 TRANSPORT CHANNEL RECONFIGURATION COMPLETE

This message is sent from the UE when a transport channel reconfiguration has been done.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
<b>UE information elements</b>					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17		
CHOICE <i>mode</i>	OP				
>FDD				(no data)	
>TDD					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.95		
>>>1.28 Mcps TDD				(no data)	REL-4
<b>RB Information elements</b>					
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM. Only applicable if the UE is moving to CELL_DCH state due to this procedure	
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13		
Uplink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBall RABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22		
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.	
>>CN domain identity	MP		CN domain identity 10.3.1.1		
>>>START	MP		START 10.3.3.38	START value to be used in this CN domain.	

## 10.2.52 TRANSPORT CHANNEL RECONFIGURATION FAILURE

This message is sent by UE if the configuration given by UTRAN is unacceptable or if the UE failed to establish the physical channel(s).

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

### 10.2.53 TRANSPORT FORMAT COMBINATION CONTROL

This message is sent by UTRAN to control the uplink transport format combination within the allowed transport format combination set.

RLC-SAP: TM, AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	CV- <i>notTM</i>		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	CV- <i>notTM</i>		RRC transaction identifier 10.3.3.36	
Integrity check info	CV- <i>notTM</i>		Integrity check info 10.3.3.16	
<b>TrCH information elements</b>				
CHOICE <i>mode</i>	MP			
>FDD				(no data)
>TDD				
>>TFCS Id	OP		Transport Format Combination Set Identity 10.3.5.21	
DPCH/PUSCH TFCS in uplink	MP		Transport Format Combination subset 10.3.5.22	
Activation time for TFC subset	CV- <i>notTMMD</i>		Activation time 10.3.3.1	Default value is "now"
TFC Control duration	CV- <i>notTMopt</i>		TFC Control duration 10.3.6.80	

Condition	Explanation
<i>NotTM</i>	The message type is not <u>needed included</u> when transmitting the message on the transparent mode signalling DCCH and <u>mandatory present otherwise</u> .
<i>NotTMopt</i>	The information element is not <u>needed included</u> when transmitting the message on the transparent mode signalling DCCH and is <u>optional otherwise</u> .
<i>NotTMMD</i>	The information element is not <u>needed included</u> when transmitting the message on the transparent mode signalling DCCH and is <u>Mandatory with default otherwise</u> .

If transparent mode signalling is used and the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.

## 10.2.54 TRANSPORT FORMAT COMBINATION CONTROL FAILURE

This message is sent to indicate that a received TRANSPORT FORMAT COMBINATION CONTROL message could not be handled by the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

### 10.2.55 UE CAPABILITY ENQUIRY

The UE CAPABILITY ENQUIRY is used by the UTRAN to enquire inter-RAT classmarks from the UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Capability update requirement	MP		Capability update requirement 10.3.3.2	

### 10.2.56 UE CAPABILITY INFORMATION

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	OP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
UE radio access capability	OP		UE radio access capability 10.3.3.42	
UE radio access capability extension	OP		UE radio access capability extension 10.3.3.42a	
<b>Other information elements</b>				
UE system specific capability	OP	1 to <maxInter SysMessages>		
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	

## 10.2.57 UE CAPABILITY INFORMATION CONFIRM

This message is sent by UTRAN to confirm that UE capability information has been received.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied

## 10.2.58 UPLINK DIRECT TRANSFER

This message is used to transfer NAS messages for an existing signalling connection.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
<b>CN information elements</b>				
CN domain identity	MP		CN domain identity 10.3.1.1	
NAS message	MP		NAS message 10.3.1.8	
<b>Measurement information elements</b>				
Measured results on RACH	OP		Measured results on RACH 10.3.7.45	

## 10.2.59 UPLINK PHYSICAL CHANNEL CONTROL

NOTE: Only for TDD.

This message is used to transfer uplink physical channel parameters to the UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
Message Type	MP		Message Type		
<b>UE information elements</b>					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	OP		Integrity check info 10.3.3.16		
<b>PhyCH information elements</b>					
CCTrCH power control info	OP		CCTrCH power control info 10.3.6.8	Power control information for one CCTrCH	
CHOICE <i>TDD option</i>	MP				REL-4
>3.84Mcps TDD					REL-4
>>Alpha	OP		Alpha 10.3.6.5		
>>Special Burst Scheduling	OP		Special Burst Scheduling 10.3.6.75a	UL Special Burst generation period in radio frames	
>>Timing Advance Control	OP		UL Timing Advance Control 10.3.6.96		
>>PRACH Constant Value	OP		Constant value 10.3.6.11	Operator controlled PRACH Margin	
>>PUSCH Constant Value	OP		Constant value 10.3.6.11	Operator controlled PUSCH Margin	
>1.28 Mcps TDD					REL-4
>>Uplink synchronisation parameters	MD			Default: Uplink synchronisation step size 1. Uplink synchronisation frequency 1.	REL-4
>>>Uplink synchronisation step size	MP		Integer(1..8)	This parameter specifies the step size to be used for the adjustment of the uplink transmission timing	REL-4
>>>Uplink synchronisation frequency	MP		Integer(1..8)	This parameter specifies the frequency of the adjustment of the uplink transmission timing	REL-4
UE positioning related parameters	<i>CV-IPDLs</i>				REL-4
>IPDL-Alpha	MP		Alpha 10.3.6.5		REL-4
>Max power increase	MP		Integer (0..3)	In db	REL-4

Condition	Explanation
<i>IPDLs</i>	This IE is present only if idle periods are applied

### 10.2.60 URA UPDATE

This message is used by the UE to initiate a URA update procedure.

RLC-SAP: TM

Logical channel: CCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
U-RNTI	MP		U-RNTI 10.3.3.47	
RRC transaction identifier	CV- <i>ProtErr</i>		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
URA update cause	MP		URA update cause 10.3.3.46	
Protocol error indicator	MD		Protocol error indicator 10.3.3.27	Default value is FALSE
<b>Other information elements</b>				
Protocol error information	CV- <i>ProtErr</i>		Protocol error information 10.3.8.12	

Condition	Explanation
<i>ProtErr</i>	The IE is mandatory present if the IE "Protocol error indicator" has the value "TRUE" <u>and not needed otherwise</u>

### 10.2.61 URA UPDATE CONFIRM

This message confirms the URA update procedure and can be used to reallocate new RNTI information for the UE valid after the URA update.

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
U-RNTI	CV-CCCH		U-RNTI 10.3.3.47	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
RRC State Indicator	MP		RRC State Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.49	Default value is the existing value of UTRAN DRX cycle length coefficient
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info 10.3.1.3	
<b>UTRAN mobility information elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	

Condition	Explanation
CCCH	This IE is <u>mandatory present only sent when CCCH is used and not needed otherwise</u>

## 10.2.62 UTRAN MOBILITY INFORMATION

This message is used by UTRAN to allocate a new RNTI and to convey other UTRAN mobility related information to a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE Information Elements</b>				
Integrity check info	CH		Integrity check info 10.3.3.16	
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
New U-RNTI	OP		U-RNTI 10.3.3.47	
New C-RNTI	OP		C-RNTI 10.3.3.8	
UE Timers and constants in connected mode	OP		UE Timers and constants in connected mode 10.3.3.43	
<b>CN Information Elements</b>				
CN Information info	OP		CN Information info full 10.3.1.3a	
<b>UTRAN Information Elements</b>				
URA identity	OP		URA identity 10.3.2.6	
<b>RB Information elements</b>				
Downlink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	

### 10.2.63 UTRAN MOBILITY INFORMATION CONFIRM

This message is used to confirm the new UTRAN mobility information for the UE.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Uplink integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	
<b>RB Information elements</b>				
COUNT-C activation time	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM. Only applicable if the UE is moving to CELL_DCH state due to this procedure
Radio bearer uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	
Uplink counter synchronisation info	OP			
>RB with PDCP information list	OP	1 to <maxRBall RABs>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	
>START list	MP	1 to <maxCNdo mains>		START [40] values for all CN domains.
>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>>START	MP		START 10.3.3.38	START value to be used in this CN domain.

## 10.2.64 UTRAN MOBILITY INFORMATION FAILURE

This message is sent to indicate a failure to act on a received UTRAN MOBILITY INFORMATION message.

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>UE information elements</b>				
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Integrity check info	CH		Integrity check info 10.3.3.16	
Failure cause	MP		Failure cause and error information 10.3.3.14	

## 10.3 Information element functional definitions

### 10.3.1 CN Information elements

#### 10.3.1.1 CN domain identity

Identifies the type of core network domain.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CN domain identity	MP		Enumerated (CS domain, PS domain)	

#### 10.3.1.2 CN Domain System Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CN domain identity	MP		CN domain identity 10.3.1.1	
<i>CHOICE CN Type</i>				
<i>&gt;GSM-MAP</i>				
>>CN domain specific NAS system information	MP		NAS system information (GSM-MAP) 10.3.1.9	
<i>&gt;ANSI-41</i>				
>>CN domain specific NAS system information	MP		ANSI-41 NAS system information, 10.3.9.4	
CN domain specific DRX cycle length coefficient	MP		CN domain specific DRX cycle length coefficient, 10.3.3.6	



## 10.3.1.3 CN Information info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN identity	OP		PLMN identity 10.3.1.11	
CN common GSM-MAP NAS system information	OP		NAS system information (GSM-MAP) 10.3.1.9	
CN domain related information	OP	1 to <maxCNdomains>		
>CN domain identity	MP		CN domain identity 10.3.1.1	
>CN domain specific GSM-MAP NAS system info	MP		NAS system information (GSM-MAP) 10.3.1.9	

NOTE 1: Necessity of PLMN is FFS and for CN domain identity and NAS system information, the confirmation in SA WG2 is needed.

## 10.3.1.3a CN Information info full

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN identity	OP		PLMN identity 10.3.1.11	
CN common GSM-MAP NAS system information	OP		NAS system information (GSM-MAP) 10.3.1.9	
CN domain related information	OP	1 to <maxCNdomains>		
>CN domain identity	MP		CN domain identity 10.3.1.1	
>CN domain specific GSM-MAP NAS system info	MP		NAS system information (GSM-MAP) 10.3.1.9	
>CN domain specific DRX cycle length coefficient	MP		CN domain specific DRX cycle length coefficient, 10.3.3.6	

## 10.3.1.4 IMEI

This IE contains an International Mobile Equipment Identity. Setting specified in [11].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
IMEI	MP	15		The first element contains the first IMEI digit, the second element the second IMEI digit and so on.
>IMEI digit	MP		INTEGER(0..15)	

### 10.3.1.5 IMSI (GSM-MAP)

This IE contains an International Mobile Subscriber Identity, used towards a GSM-MAP type of PLMN. Setting specified in [11].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
IMSI	MP	6 to 15		The first element contains the first IMSI digit, the second element the second IMSI digit and so on.
>IMSI digit	MP		INTEGER(0..9)	

### 10.3.1.6 Intra Domain NAS Node Selector

This IE carries information to be used to route the establishment of a signalling connection to a CN node within a CN domain.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>version</i>	MP			
>R99				
>>CHOICE <i>CN type</i>	MP			
>>>GSM-MAP				
>>>>CHOICE <i>Routing basis</i>	MP			
>>>>>local (P)TMSI				TMSI allocated in the current LA or PTMSI allocated in the current RA
>>>>>>Routing parameter	MP		Bitstring (10)	The TMSI/ PTMSI consists of 4 octets (32bits). The bits are numbered from b0 to b31, with bit b0 being the least significant The "Routing parameter" bitstring consists of bits b14 through b23 of the TMSI/ PTMSI where bit b14 is the least significant.
>>>>>(P)TMSI of same PLMN, different (RA)LA				TMSI allocated in another LA of this PLMN or PTMSI allocated in another RA this PLMN
>>>>>>Routing parameter	MP		Bitstring (10)	The TMSI/ PTMSI consists of 4 octets (32bits). The bits are numbered from b0 to b31, with bit b0 being the least significant The "Routing parameter" bitstring consists of bits b14 through b23 of the TMSI/ PTMSI where bit b14 is the least significant.
>>>>>(P)TMSI of different PLMN				TMSI or a PTMSI allocated in another PLMN
>>>>>>Routing parameter	MP		Bitstring (10)	The TMSI/ PTMSI consists of 4 octets (32bits). The bits are numbered from b0 to b31, with bit b0 being the least significant The "Routing parameter" bitstring consists of bits b14 through b23 of the TMSI/ PTMSI where bit b14 is the least significant.
>>>>>IMSI(response to IMSI paging)				NAS identity is IMSI
>>>>>>Routing parameter	MP		Bitstring (10)	The "Routing parameter" bitstring consists of DecimalToBinary [(IMSI div 10) mod 1000]. The bits of the result are numbered from b0 to b9, with bit b0 being the least significant.
>>>>>IMSI(cause UE initiated event)				NAS identity is IMSI
>>>>>>Routing parameter	MP		Bitstring (10)	The "Routing parameter" bitstring consists of DecimalToBinary [(IMSI div 10) mod 1000]. The bits of the result are numbered from b0 to b9, with bit b0 being the least significant.
>>>>>IMEI				NAS parameter is IMEI

>>>>>Routing parameter	MP		Bitstring (10)	The "Routing parameter" bitstring consists of DecimalToBinary [(IMEI div 10) mod 1000]. The bits of the result are numbered from b0 to b9, with bit b0 being the least significant.
>>>>>Spare 1			Bitstring (10)	This choice shall not be used in this version
>>>>>Spare 2			Bitstring (10)	This choice shall not be used in this version
>>>>Entered parameter	MP		Boolean	Entered parameter shall be set to TRUE if the most significant byte of the current LAI/RAI is different compared to the most significant byte of the LAI/RAI stored on the SIM; Entered parameter shall be set to FALSE otherwise
>>>ANSI-41			Bitstring (14)	All bits shall be set to 0
>Later			Bitstring(15)	This bitstring shall not be sent by mobiles that are compliant to this version of the protocol.

### 10.3.1.7 Location Area Identification

Identifies uniquely a location area for a GSM-MAP type of PLMN. Setting specified in [5].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN identity	MP		PLMN identity 10.3.1.11	
LAC	MP		Bit string(16)	The LAC bits are numbered b0-b15, where b0 is the least significant bit.

### 10.3.1.8 NAS message

A non-access stratum message to be transferred transparently through UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
NAS message	MP		Octet string (1..4095)	The first octet contains octet 1 [17] of the NAS message, the second octet contains octet 2 of the NAS message and so on.

### 10.3.1.9 NAS system information (GSM-MAP)

This information element contains system information that belongs to the non-access stratum for a GSM-MAP type of PLMN. This information is transparent to RRC. It may contain either information specific to one CN domain (CS or PS) or information common for both CN domains.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
GSM-MAP NAS system information	MP		Octet string(1..8 )	The first octet contains octet 1 [17] of the NAS system information element, the second octet contains octet 2 of the NAS system information element and so on.

### 10.3.1.10 Paging record type identifier

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Paging record type identifier	MP		Enumerated (IMSI (GSM-MAP), TMSI (GSM-MAP)/ P-TMSI, IMSI (DS-41), TMSI (DS-41))	

### 10.3.1.11 PLMN identity

This information element identifies a Public Land Mobile Network for a GSM-MAP type of PLMN. Setting of digits is defined in [11].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MCC	MP	3		The first element contains the first MCC digit, the second element the second MCC digit and so on.
>MCC digit	MP		INTEGER(0..9)	
MNC	MP	2 to 3		The first element contains the first MNC digit, the second element the second MNC digit and so on.
>MNC digit	MP		INTEGER(0..9)	

### 10.3.1.12 PLMN Type

Identifies the type of Public Land Mobile Network (PLMN). This IE shall be used to control the interpretation of network dependent messages and information elements in the RRC protocol.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN Type	MP		Enumerated (GSM-MAP, ANSI-41, GSM-MAP and ANSI-41)	

### 10.3.1.13 P-TMSI (GSM-MAP)

This IE contains a Packet Temporary Mobile Subscriber Identity, used towards a GSM-MAP type of PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
P-TMSI	MP		Bit string (32)	Setting specified in [11]. The P-TMSI bits are numbered b0-b31, where b0 is the least significant bit.

### 10.3.1.14 RAB identity

This information element uniquely identifies a radio access bearer within a CN domain.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>RAB identity type</i>	MP			
>RAB identity (GSM-MAP)			Bit string (8)	Formatted according to [5]. The bits are numbered b1-b8, where b1 is the least significant bit.
>RAB identity (ANSI-41)			Bit string (8)	The bits are numbered b1-b8, where b1 is the least significant bit.

CHOICE <i>NAS binding info type</i>	Condition under which the given <i>RAB identity type</i> is chosen
RAB identity (GSM-MAP)	PLMN is of type GSM-MAP
RAB identity (ANSI-41)	PLMN is of type ANSI-41

### 10.3.1.15 Routing Area Code

Identifies a routing area within a location area for a GSM-MAP type of PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Routing Area Code	MP		Bit string(8)	Setting specified in [11]. The Routing Area Code bits are numbered b0 to b7, where b0 is the least significant bit.

### 10.3.1.16 Routing Area Identification

Identifies uniquely a routing area for a GSM-MAP type of PLMN. Setting specified in [11].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
LAI	MP		Location area identification 10.3.1.7	
RAC	MP		Routing area code 10.3.1.15	

### 10.3.1.17 TMSI (GSM-MAP)

This IE contains a Temporary Mobile Subscriber Identity, used towards a GSM-MAP type of PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TMSI (GSM-MAP)	MP		Bit string (32)	Setting specified in [11]. The TMSI bits are numbered b0-b31, where b0 is the least significant bit.

## 10.3.2 UTRAN mobility Information elements

### 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	<i>CV-Barred</i>		Enumerated(not allowed, allowed)	
$T_{\text{barred}}$	<i>CV-Barred</i>		Integer (10,20,40,80,160,320,640,1280)	[4]
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
<i>Barred</i>	The IE <i>Presence</i> is mandatory present if the IE "Cell Barred" has the value "Barred"; otherwise the element is not needed in the message.

### 10.3.2.2 Cell identity

This information element identifies a cell unambiguously within a PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell identity	MP		bit string(28)	

## 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	
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.
CHOICE mode	MP			
>FDD				
>>S <sub>intrasearch</sub>	OP		Integer (-32..20 by step of 2)	[4] [dB]
>>S <sub>intersearch</sub>	OP		Integer (-32..20 by step of 2)	[4] [dB]
>>S <sub>searchHCS</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>>RAT List	OP	1 to <maxOther RAT>		
>>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	
>>>>S <sub>search,RAT</sub>	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] [dB]
>>>>S <sub>HCS,RAT</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>>>S <sub>limit,SearchRAT</sub>	OP		Integer (-32..20 by step of 2)	[4] [dB]
>>Qqualmin	MP		Integer (-24..0)	Ec/N0, [dB]
>>Qrxlevmin	MP		Integer (-115..-25 by step of 2)	RSCP, [dBm]
>TDD				
>>S <sub>intrasearch</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>S <sub>intersearch</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>S <sub>searchHCS</sub>	OP		Integer (-105..91 by step of 2)	[4] [dB]
>>>>RAT List	OP	1 to <maxOther RAT>		
>>>>>RAT identifier	MP		Enumerated (GSM, cdma2000)	
>>>>>S <sub>search,RAT</sub>	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] [dB]
>>>>>S <sub>HCS,RAT</sub>	OP		Integer (-	[4]



			105..91 by step of 2)	[dB]
>>>S <sub>limit,SearchRAT</sub>	MP		Integer (-105..91 by step of 2)	[4] [dB]
>>Q <sub>rxlevmin</sub>	MP		Integer (-115..-25 by step of 2)	RSCP, [dBm]
Q <sub>hyst1s</sub>	MP		Integer (0..40 by step of 2)	[4] [dB]
Q <sub>hyst2s</sub>	CV-FDD-Quality-Measure		Integer (0..40 by step of 2)	Default value is Q <sub>hyst1s</sub> [4] [dB]
T <sub>reselections</sub>	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	The IE is not needed. 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 <sub>s,n</sub>	MD		Integer(-50..50)	Default value is 0. [dB]
Qoffset2 <sub>s,n</sub>	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 >FDD	MP			
>>Qqualmin	MD		Integer (-24..0)	Ec/NO, [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, [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

## 10.3.2.5 Mapping Info

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
Mapping List	MP	1 to <MaxRAT>			
>RAT	MP		Enumerated (UTRA FDD, UTRA TDD 3.84 Mcps, UTRA TDD 1.28 Mcps, GSM, cdma2000)		UTRA TDD 1.28 Mcps is included for REL-4.
>Mapping Function Parameter List	MP	1 to <maxMeas Intervals>			
>>Function type	MP		Enumerated (linear, function type 2, function type 3, function type 4)	Type of the function within the interval.	
>>Map_parameter_1	MD		Integer (0..99)	Parameter describing the mapping function between the quality measurement and the representing quality value, see [4]. Default value is zero for the first interval or otherwise the value of Map_parameter_2 of the interval before.	
>>Map_parameter_2	MP		Integer (0..99)	Parameter describing the mapping function between the quality measurement and the representing quality value, see [4].	
>>Upper_limit	CV- <i>MaxInt</i>		Integer (1..MaxMeas )	Upper limit of interval for which the Map_parameter_1 and Map_parameter_2 are valid. MaxMeas = 25 if RAT = UTRA FDD / CPICH Ec/N0, MaxMeas = 91 if RAT = UTRA TDD 3.84 Mcps or if RAT = UTRA TDD 1.28 Mcps or if RAT = UTRA	UTRA TDD 1.28 Mcps is included for REL-4.

				FDD/ CPICH RSCP, MaxMeas = 63 if RAT = GSM.	
--	--	--	--	--	--

Condition	Explanation
MaxInt	This IE information is mandatory present only sent if Mapping Function Parameter List has not reached maxMeasIntervals and is not needed otherwise.

### 10.3.2.6 URA identity

Gives the identity of the UTRAN Registration Area. It can be used to indicate to the UE which URA it shall use in case of overlapping URAs.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
URA identity	MP		bit string(16)	

## 10.3.3 UE Information elements

### 10.3.3.1 Activation time

Activation Time defines the frame number/time at which the operation/changes caused by the related message shall take effect. Values between 0 and 255 indicate the absolute value of CFN (Connection Frame Number) of that frame number/time.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Activation time	MP		Integer(0..255)	CFN [10]

### 10.3.3.2 Capability Update Requirement

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

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

Default value is:

"UE radio capability FDD update requirement" = false

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

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

"System specific capability update requirement" not present.

### 10.3.3.3 Cell update cause

Indicates the cause for cell update.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell update cause	MP		Enumerated (cell reselection, periodical cell update, uplink data transmission , paging response, re-entered service area, radio link failure, RLC unrecoverable error)	At least one spare value needed.

### 10.3.3.4 Ciphering Algorithm

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ciphering algorithm	MP		Enumerated (UEA0, UEA1)	

### 10.3.3.5 Ciphering mode info

This information element contains the ciphering specific security mode control information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ciphering mode command	MP		Enumerated (start/restart, stop)	
Ciphering algorithm	CV- <i>notStop</i>		Ciphering algorithm 10.3.3.4	
Ciphering activation time for DPCH	OP		Activation time 10.3.3.1	Used for radio bearers mapped on RLC-TM. Only applicable if the UE is already in CELL_DCH state
Radio bearer downlink ciphering activation time info	OP		RB activation time info, 10.3.4.13	Used for radio bearers mapped on RLC-AM or RLC-UM

Condition	Explanation
<i>notStop</i>	The IE is mandatory <u>present</u> if the IE "Ciphering mode command" has the value "start/restart", otherwise the IE is not needed in the message.

### 10.3.3.6 CN domain specific DRX cycle length coefficient

A coefficient in the formula to count the paging occasions to be used by a specific UE (specified in [4]) .

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CN domain specific DRX cycle length coefficient	MP		Integer(6...9)	Refers to 'k' in the formula as specified in [4], Discontinuous reception

### 10.3.3.7 CPCH Parameters

NOTE: Only for FDD.

These parameters are used by any UE using any CPCH set allocated to the cell that is broadcasting this system information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Initial Priority Delay	OP	1 to maxASC		Initial delays for ASC priority.
>NS_IP	MP		Integer (0...28)	Number of slots for initial fixed delay for each ASC priority level
Backoff control parameters	MP			
>N_ap_retrans_max	MP		Integer (1...64)	Max number of AP transmissions without AP-AICH response, a PHY parameter.
>N_access_fails	MP		Integer (1...64)	Max number of preamble ramping cycles when NAK response received, a MAC parameter.
>NF_bo_no_aich	MP		Integer (0...31)	Number of frames for UE backoff after N <sub>ap_retrans_max</sub> unsuccessful AP access attempts, a MAC parameter.
>NS_bo_busy	MP		Integer (0...63)	Number of slots for UE fixed backoff after access attempt to busy CPCH, a MAC parameter.
>NF_bo_all_busy	MP		Integer (0...31)	Max number of frames for UE backoff after access attempt to last busy CPCH, a MAC parameter. UE randomly selects backoff value from range (0..NF_bo_all_busy)
>NF_bo_mismatch	MP		Integer (0...127)	Max number of frames for the UE backoff after received mismatch on CD/CA-ICH, a MAC parameter. UE randomly selects backoff value from range (0..NF_bo_mismatch)
>T_CPCH	MP		Enumerated (0, 1)	CPCH channel timing used to determine Tau, a PHY parameter
Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands
TPC step size	CV-algo		Integer (1, 2)	In dB
DL DPCCH BER	MP		Integer (0..63)	The BER quality value shall be set in the range $0 \leq \text{DPCCH BER} \leq 1$ in the unit BER_dB where:  BER_dB_0: DPCCH BER = 0  BER_dB_1: $-\infty < \text{Log}_{10}(\text{DPCCH BER}) < -4.03$  BER_dB_2: $-4.03 \leq \text{Log}_{10}(\text{DPCCH BER}) < -3.965$  BER_dB_3: $-3.965 \leq \text{Log}_{10}(\text{DPCCH BER}) < -3.9$ ... BER_dB_61: $-0.195 \leq \text{Log}_{10}(\text{DPCCH BER}) < -0.13$  BER_dB_62: $-0.13 \leq$

				Log10(DPCCH BER) < -0.065 BER_dB_63: -0.065 ≤ Log10(DPCCH BER) ≤ 0
--	--	--	--	--

Condition	Explanation
<i>algo</i>	The IE is mandatory present if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

### 10.3.3.8 C-RNTI

The cell RNTI (C-RNTI) identifies a UE having a RRC connection within a cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
C-RNTI	MP		bit string(16)	

### 10.3.3.9 DRAC system information

Information element	Need	Multi	Type and reference	Semantics description
DRAC system information	MP	1 to <maxDRA Cclasses>		DRAC information is sent for each class of terminal
>Transmission probability	MP		Transmission probability 10.3.3.39	
>Maximum bit rate	MP		Maximum bit rate 10.3.3.20	

### 10.3.3.10 RRC State Indicator

Indicates to a UE the RRC state to be entered.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RRC State indicator	MP		Enumerated(CELL_DCH, CELL_FACH, CELL_PCH, URA_PCH)	

### 10.3.3.11 Establishment cause

Cause for an RRC connection establishment request.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Establishment cause	MP		Enumerated( Originating Conversational Call, Originating Streaming Call, Originating Interactive Call, Originating Background Call, Originating Subscribed traffic Call, Terminating Conversational Call, Terminating Streaming Call, Terminating Interactive Call, Terminating Background Call, Emergency Call, Inter-RAT cell re-selection, Inter-RAT cell change order, Registration, Detach, Originating High Priority Signalling, Originating Low Priority Signalling, Call re-establishment, Terminating High Priority Signalling, Terminating Low Priority Signalling, Terminating – cause unknown)	At least one spare value needed.

10.3.3.12 Expiration Time Factor

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Expiration Time Factor	MP		Enumerated( 2times, 4times, 8times, 16times, 32times, 64times, 128times, 256times)	

10.3.3.13 Failure cause

Cause for failure to perform the requested procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	MP		Enumerated (configuration unsupported, physical channel failure, incompatible simultaneous reconfiguration, protocol error, compressed mode runtime error, cell update occurred, invalid configuration, configuration incomplete, unsupported measurement)	At least one spare value needed.

### 10.3.3.14 Failure cause and error information

Cause for failure to perform the requested procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	MP		Failure cause 10.3.3.13	
Protocol error information	CV-ProtErr		Protocol error information 10.3.8.12	
Deleted TGPSI	CV-CompModeErr		TGPSI 10.3.6.82	

Condition	Explanation
<i>ProtErr</i>	The IE Presence is mandatory <u>present</u> if the IE "Failure cause" has the value "Protocol error"; otherwise the element is not needed in the message.
<i>CompModeErr</i>	The IE Presence is mandatory <u>present</u> if the IE "Failure cause" has the value "Compressed mode runtime error"; otherwise the element is not needed in the message

### 10.3.3.15 Initial UE identity

This information element identifies the UE at a request of an RRC connection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>UE id type</i>	MP			
>IMSI (GSM-MAP)			IMSI (GSM-MAP) 10.3.1.5	
>TMSI and LAI (GSM-MAP)				
>>TMSI (GSM-MAP)	MP		TMSI (GSM-MAP) 10.3.1.17	
>>LAI (GSM-MAP)	MP		Location Area Identification 10.3.1.7	
>P-TMSI and RAI (GSM-MAP)				
>>P-TMSI (GSM-MAP)	MP		P-TMSI (GSM-MAP) 10.3.1.13	
>>RAI (GSM-MAP)	MP		Routing Area Identification 10.3.1.16	
>IMEI			IMEI 10.3.1.4	
>ESN (DS-41)			bitstring (SIZE (32))	TIA/EIA/IS-2000-4
>IMSI (DS-41)			octetstring (SIZE (5..7))	TIA/EIA/IS-2000-4
>IMSI and ESN (DS-41)				TIA/EIA/IS-2000-4
>>IMSI (DS-41)	MP		octetstring (SIZE (5..7))	TIA/EIA/IS-2000-4
>>ESN (DS-41)	MP		bitstring (SIZE (32))	TIA/EIA/IS-2000-4
>TMSI (DS-41)			octetstring (SIZE (2..12))	TIA/EIA/IS-2000-4

### 10.3.3.16 Integrity check info

The Integrity check info contains the RRC message sequence number needed in the calculation of XMAC-I [40] and the calculated MAC-I.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message authentication code	MP		bit string(32)	MAC-I [40]. The Message Authentication Code bits are numbered b0-b31, where b0 is the least significant bit. The 27 MSB of the IE shall be set to zero and the 5 LSB of the IE shall be set to the used signalling radio bearer identity when the encoded RRC message is used as the MESSAGE parameter in the integrity protection algorithm.
RRC Message sequence number	MP		Integer (0..15)	The local RRC hyper frame number (RRC HFN) is concatenated with the RRC message sequence number to form the input parameter COUNT-I for the integrity protection algorithm. The IE value shall be set to zero when the encoded RRC message is used as the MESSAGE parameter in the integrity protection algorithm.

### 10.3.3.17 Integrity protection activation info

This IE contains the time, in terms of RRC sequence numbers, when a new integrity protection configuration shall be activated for the signalling radio bearers.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RRC message sequence number list	MP	4 to 5		The RRC sequence number when a new integrity protection configuration shall be applied, for CCCH (=RB0) and signalling radio bearers in the order RB0, RB1, RB2, RB3, RB4.  The value for RB1 shall be ignored if this IE was included in a RRC message sent on RB1.  The value for RB2 shall be ignored if this IE was included in a RRC message sent on RB2.
>RRC message sequence number	MP		Integer (0..15)	

### 10.3.3.18 Integrity protection Algorithm

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Integrity protection algorithm	MP		Enumerated (UIA1)	

10.3.3.19 Integrity protection mode info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Integrity protection mode command	MP		Enumerated(start, modify)	
Downlink integrity protection activation info	CV-modify		Integrity protection activation info 10.3.3.17	
Integrity protection algorithm	OP		Integrity protection algorithm 10.3.3.18	
Integrity protection initialisation number	CV-start		Bitstring(32)	FRESH [40]

Condition	Explanation
<i>Start</i>	The IE is mandatory <u>present</u> if the IE "Integrity protection mode command" has the value "start ", otherwise it is not needed in the message.
<i>Modify</i>	The IE is <u>mandatory only</u> present if the IE "Integrity protection mode command" has the value "modify" <u>and not needed otherwise</u>

10.3.3.20 Maximum bit rate

NOTE: Only for FDD.

Indicates the maximum user bit rate allowed on a DCH controlled by DRAC procedure for the transmission period (Transmission time validity).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Maximum bit rate	MP		integer(0..512 by step of 16)	=kbit/s

## 10.3.3.21 Measurement capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Need for downlink compressed mode					
FDD measurements	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on FDD	
3.84Mcps TDD measurements	CV- 3.84Mcps_ tdd_sup		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on 3.84Mcps TDD	Name changed in REL-4
1.28Mcps TDD measurements	CV- 1.28Mcps_ tdd_sup		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on 1.28Mcps TDD	REL-4
GSM 900	CV- Gsm900_ supM		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on GSM 900	
DCS 1800	CV- Gsm1800_ sup		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on DCS 1800	
GSM 1900	CV- Gsm1900_ sup		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on GSM 1900	
Multi-carrier measurement	CV- mc_sup		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on multi-carrier	
Need for uplink compressed mode					
FDD measurements	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on FDD	
3.84Mcps TDD measurements	CV- 3.84Mcps_ tdd_sup		Boolean	TRUE means that the UE requires UL compressed mode in order to	Name changed in REL-4

				perform measurements on 3.84Mcps TDD	
1.28Mcps TDD measurements	CV-1.28Mcps_tdd_sup		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on 1.28Mcps TDD	REL-4
GSM 900	CV-Gsm900_sup		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on GSM 900	
DCS 1800	CV-Gsm1800_sup		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on DCS 1800	
GSM 1900	CV-Gsm1900_sup		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on GSM 1900	
Multi-carrier measurement	CV-mc_sup		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on multi-carrier	

Condition	Explanation
<i>3.84Mcps_tdd_sup</i>	The IE <u>Presence</u> is mandatory <u>present</u> if an IE "TDD RF capability" is present with the IE "Chip rate capability" set to "3.84Mcps". Otherwise this field is not needed in the message.
<i>1.28Mcps_tdd_sup</i>	The IE <u>Presence</u> is mandatory <u>present</u> if an IE "TDD RF capability" is present with the IE "Chip rate capability" set to "1.28Mcps". Otherwise this field is not needed in the message.
<i>Gsm900_sup</i>	The IE is mandatory <u>present</u> . <u>Presence is needed</u> if the IE "Inter-RAT UE radio access capability" indicates support for GSM900 <u>and not needed otherwise</u> . <u>Absence is needed</u> if the IE "Inter-RAT UE radio access capability" indicates no support for GSM900.
<i>Gsm1800_sup</i>	The IE is mandatory <u>present</u> . <u>Presence is needed</u> if the IE "Inter-RAT UE radio access capability" indicates support for GSM1800 <u>and not needed otherwise</u> . <u>Absence is needed</u> if the IE "Inter-RAT UE radio access capability" indicates no support for GSM1800.
<i>Gsm1900_sup</i>	The IE is mandatory <u>present</u> . <u>Presence is needed</u> if the IE "Inter-RAT UE radio access capability" indicates support for GSM1900 <u>and not needed otherwise</u> . <u>Absence is needed</u> if the IE "Inter-RAT UE radio access capability" indicates no support for GSM1900.
<i>mc_sup</i>	The IE <u>Presence</u> is mandatory <u>present</u> if IE Support of multi-carrier has the value TRUE. Otherwise this field is not needed in the message.

### 10.3.3.21a Measurement capability extension

This IE may be used to replace the measurement capability information provided within IE "Measurement capability".



Information Element/Group name	Need	Multi	Type and reference	Semantics description
FDD measurements	MP	1 to <maxFreq BandsFDD >		
>FDD Frequency band	MD		Enumerated(FDD2100, FDD1900)	The default value is the same as indicated in the IE "Frequency band" included in the IE " UE radio access capability extension". At least one spare value is needed
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on the FDD frequency band indicated by the IE "FDD Frequency band"
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on the FDD frequency band indicated by the IE "FDD Frequency band"
TDD measurements	CV- <i>tdd_sup</i>	1 to <maxFreq BandsTDD >		
>TDD Frequency band	MP		Enumerated(a, b, c)	
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on TDD frequency band indicated by the IE "TDD Frequency band"
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on TDD frequency band indicated by the IE "TDD Frequency band"
GSM measurements	CV- <i>gsm_sup</i>	1 to <maxFreq BandsGS M>		
>GSM Frequency band	MP		Enumerated(GSM450, GSM480, GSM850, GSM900P, GSM900E, GSM1800, GSM1900)	as defined in [45] at least one spare value
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on GSM frequency band indicated by the IE "GSM Frequency band"
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on GSM frequency band indicated by the IE "GSM Frequency band"

Multi-carrier measurement	CV- <i>mc_sup</i>			
>Need for DL compressed mode	MP		Boolean	TRUE means that the UE requires DL compressed mode in order to perform measurements on multi-carrier
>Need for UL compressed mode	MP		Boolean	TRUE means that the UE requires UL compressed mode in order to perform measurements on multi-carrier

Condition	Explanation
<i>tdd_sup</i>	The IE <u>Presence</u> is mandatory <u>present</u> if IE Multi-mode capability has the value "TDD" or "FDD/TDD". Otherwise this field is not needed in the message.
<i>gsm_sup</i>	The IE <u>Presence</u> is mandatory <u>present</u> if IE Support of GSM has the value TRUE. Otherwise this field is not needed in the message.
<i>mc_sup</i>	The IE <u>Presence</u> is mandatory <u>present</u> if IE Support of multi-carrier has the value TRUE. Otherwise this field is not needed in the message.

### 10.3.3.22 Paging cause

Cause for a CN originated page.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Paging cause	MP		Enumerated( Terminating Conversational Call, Terminating Streaming Call, Terminating Interactive Call, Terminating Background Call, Terminating High Priority Signalling, Terminating Low Priority Signalling, Terminating – cause unknown )	

10.3.3.23 Paging record

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Used paging identity</i>	MP			
>CN identity				
>>Paging cause	MP		Paging cause 10.3.3.22	
>>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>>CHOICE <i>UE Identity</i>	MP			
>>>>IMSI (GSM-MAP)			IMSI (GSM-MAP) 10.3.1.5	
>>>>TMSI (GSM-MAP)			TMSI (GSM-MAP) 10.3.1.17	
>>>>P-TMSI (GSM-MAP)			P-TMSI (GSM-MAP) 10.3.1.13	
>>>>IMSI (DS-41)			TIA/EIA/IS-2000-4	
>>>>TMSI (DS-41)			TIA/EIA/IS-2000-4	
>UTRAN identity				
>>U-RNTI	MP		U-RNTI 10.3.3.47	
>>>CN originated page to connected mode UE	OP			
>>>>Paging cause	MP		Paging cause 10.3.3.22	
>>>>CN domain identity	MP		CN domain identity 10.3.1.1	
>>>>Paging record type identifier	MP		Paging record type identifier 10.3.1.10	

Condition	Explanation
CHOICE <i>Used paging identity</i>	Condition under which the given <i>used paging identity</i> is chosen
CN identity	For CN originating pages (for idle mode UEs)
UTRAN identity	For UTRAN originating pages (for connected mode UEs)

10.3.3.24 PDCP capability

Indicates which algorithms and which value range of their parameters are supported by the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Support for lossless SRNS relocation	MP		Boolean	TRUE means supported	
Support for RFC2507	MP		Boolean	TRUE means supported	
>Max HC context space			Integer(512, 1024, 2048, 4096, 8192)		
Support for RFC 3095	MP		Boolean	TRUE means supported	REL-4
>Maximum number of ROHC context sessions	MD		Integer( 2, 4, 8, 12, 16, 24, 32, 48, 64, 128, 256, 512, 1024, 16384)	Default value is 16.	REL-4
>Reverse decompression depth	MD		Integer (0..65535)	Default value is 0 (reverse decompression shall not be used).	REL-4

## 10.3.3.25 Physical channel capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
Downlink physical channel capability information elements					
FDD downlink physical channel capability	CH- <i>fdd_req_su p</i>				
>Max no DPCH/PDSCH codes	MP		Integer (1..8)	Maximum number of DPCH/PDSCH codes to be simultaneously received	
>Max no physical channel bits received	MP		Integer (600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800)	Maximum number of physical channel bits received in any 10 ms interval (DPCH, PDSCH, S-CCPCH)	
>Support for SF 512	MP		Boolean	TRUE means supported	
>Support of PDSCH	MP		Boolean	TRUE means supported	
>Simultaneous reception of SCCPCH and DPCH	MP		Boolean	TRUE means supported	
>Simultaneous reception of SCCPCH, DPCH and PDSCH	CV- <i>if_sim_rec _pdsch _sup</i>		Boolean	TRUE means supported	
>Max no of S-CCPCH RL	CV- <i>if_sim_rec</i>		Integer(1)	Maximum number of simultaneous S-CCPCH radio links	
3.84Mcps TDD downlink physical channel capability	CH- <i>3.84Mcps_ tdd_req_su p</i>				Name changed in REL-4
>Maximum number of timeslots per frame	MP		Integer (1..14)		
>Maximum number of physical channels per frame	MP		Integer (1..224)		
>Minimum SF	MP		Integer (1, 16)		
>Support of PDSCH	MP		Boolean	TRUE means supported	
>Maximum number of physical channels per timeslot	MP		Integer (1..16)		
1.28Mcps TDD downlink physical channel capability	CH- <i>1.28Mcps_ tdd_req_su p</i>				REL-4
>Maximum number of timeslots per subframe	MP		Integer (1..6)		REL-4
>Maximum number of physical channels per subframe	MP		Integer (1..96)		REL-4
>Minimum SF	MP		Integer (1, 16)		REL-4
>Support of PDSCH	MP		Boolean	TRUE means supported	REL-4
>Maximum number of physical	MP		Integer		REL-4

channels per timeslot			(1..16)		
>Support of 8PSK	MP		Boolean	TRUE means supported	REL-4
<b>Uplink physical channel capability information elements</b>					
FDD uplink physical channel capability	CH- <i>fdd_req_su p</i>				
>Maximum number of DPDCH bits transmitted per 10 ms	MP		Integer (600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600)		
>Support of PCPCH	MP		Boolean	TRUE means supported	
3.84Mcps TDD uplink physical channel capability	CH- <i>3.84Mcps_ tdd_req_su p</i>				Name changed in REL-4
>Maximum Number of timeslots per frame	MP		Integer (1..14)		
>Maximum number of physical channels per timeslot	MP		Integer (1, 2)		
>Minimum SF	MP		Integer (1, 2, 4, 8, 16)		
>Support of PUSCH	MP		Boolean	TRUE means supported	
1.28Mcps TDD uplink physical channel capability	CH- <i>1.28Mcps_ tdd_req_su p</i>				REL-4
>Maximum Number of timeslots per subframe	MP		Integer (1..6)		REL-4
>Maximum number of physical channels per timeslot	MP		Integer (1, 2)		REL-4
>Minimum SF	MP		Integer (1, 2, 4, 8, 16)		REL-4
>Support of PUSCH	MP		Boolean	TRUE means supported	REL-4
>Support of 8PSK	MP		Boolean	TRUE means supported	REL-4

Condition	Explanation
<i>if_sim_rec_pdsch_sup</i>	The IE Presence is mandatory <u>present</u> if IE Simultaneous reception of SCCPCH and DPCH = True and IE Support of PDSCH = True. Otherwise this field is not needed in the message.
<i>if_sim_rec</i>	The IE Presence is mandatory <u>present</u> if IE capability Simultaneous reception of SCCPCH and DPCH = True. Otherwise this field is not needed in the message.
<i>3.84Mcps_tdd_req_sup</i>	The IE Presence is mandatory <u>present</u> if an IE "TDD RF capability" is present with the IE "Chip rate capability" set to "3.84Mcps" and a 3.84Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
<i>1.28Mcps_tdd_req_sup</i>	The IE Presence is mandatory <u>present</u> if an IE "TDD RF capability" is present with the IE "Chip rate capability" set to "1.28Mcps" and a 1.28Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
<i>fdd_req_sup</i>	The IE Presence is mandatory <u>present</u> if IE Multi-mode capability has the value "FDD" or "FDD/TDD" and a FDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

### 10.3.3.26 Protocol error cause

This IE indicates the cause for a message or information that was not comprehended.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error cause	MP		Enumerated (ASN.1 violation or encoding error, Message type non-existent or not implemented, Message not compatible with receiver state, Information element value not comprehended, Conditional information element error, Message extension not comprehended)	At least one spare value needed.

### 10.3.3.27 Protocol error indicator

This IE indicates whether a message was transmitted due to a protocol error or not.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Protocol error indicator	MP		Boolean	TRUE means a protocol error occurred. FALSE means a protocol error did not occur.

### 10.3.3.28 RB timer indicator

This IE is used to indicate to UTRAN if the timers T314 or T315 has expired in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T314 expired	MP		Boolean	TRUE means that the timer has expired or the stored value is zero. FALSE means that the timer has not expired.
T315 expired	MP		Boolean	TRUE means that the timer has expired or the stored value is zero. FALSE means that the timer has not expired.

### 10.3.3.29 Redirection info

This IE is used to redirect the UE to another frequency or other system.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Redirection Information</i>	MP			
>Frequency info			Frequency info 10.3.6.36	
>Inter-RAT info			Inter-RAT info 10.3.7.25	

### 10.3.3.30 Re-establishment timer

This information element indicates which timer to associate with RAB.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Re-establishment timer	MP		Enumerated(useT314, useT315)	

### 10.3.3.31 Rejection cause

Cause for rejection of RRC connection establishment request.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Rejection cause	MP		Enumerated(congestion, unspecified)	



## 10.3.3.32 Release cause

Cause for release of RRC connection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Release cause	MP		Enumerated (normal event, unspecified, pre-emptive release, congestion, re-establishment reject, user inactivity), directed signalling connection re-establishment)	

## 10.3.3.33 RF capability FDD

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
UE power class	MP		Enumerated(1..4)	as defined in [21]	
Tx/Rx frequency separation	MP		Enumerated(190, 174.8-205.2, 134.8-245.2)	In MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band a (as defined in [21]).	

## 10.3.3.33a RF capability FDD extension

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE power class extension	MP		Enumerated(1..4)	as defined in [21]. At least one spare value is needed
Tx/Rx frequency separation	MP		Enumerated(190, 174.8-205.2, 134.8-245.2)	In MHz as defined in [21]. NOTE: Not applicable if UE is not operating in frequency band a (as defined in [21]).

## 10.3.3.33b RF capability TDD

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE power class	MP		Enumerated (1..4)	as defined in [22]
Radio frequency bands	MP		Enumerated(a, b, c, a+b, a+c, b+c, a+b+c)	as defined in [22]
Chip rate capability	MP		Enumerated(3.84Mcps, 1.28Mcps)	as defined in [22]

## 10.3.3.34 RLC capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Total RLC AM buffer size	MP		Integer (2,10,50,100,150,500,1000)	Total receiving and transmitting RLC AM buffer capability in kBytes
Maximum RLC AM Window Size	MP		Integer(2047,4095)	Maximum supported RLC TX and RX window in UE
Maximum number of AM entities	MP		Integer (3,4,5,6,8,16,30)	

## 10.3.3.35 RLC re-establish indicator

This IE is used to re-configure AM RLC on c-plane and u-plane.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RLC re-establish indicator	MP		Boolean	TRUE means re-establish required FALSE means re-establish not required

## 10.3.3.36 RRC transaction identifier

This IE contains an identification of the RRC procedure transaction local for the type of the message this IE was included within.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RRC transaction identifier	MP		Integer (0..3)	

## 10.3.3.37 Security capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ciphering algorithm capability	MP			
>UEA0	MP		Boolean	The value TRUE means that an unciphered connection after the Security mode control procedure is accepted by the UE.
>UEA1	MP		Boolean	The value TRUE means that UEA1, Kasumi, is supported
>Spare	MP	14	Boolean	Shall be set to FALSE by UEs complying with this version of the protocol.
Integrity protection algorithm capability	MP			
>UIA1	MP		Boolean	The value TRUE means that UIA1, Kasumi, is supported
>Spare	MP	15	Boolean	Shall be set to FALSE by UEs complying with this version of the protocol.

NOTE: The UE shall support at least one UEAx other than UEA0 and one UIAx.

## 10.3.3.38 START

There is a START value per CN domain. The START is used to initialise the 20 MSBs of all hyper frame numbers (MAC-d HFN, RLC UM HFN, RLC AM HFN, RRC HFN) for a CN domain.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
START	MP		Bit string (20)	The START [40] bits are numbered b0-b19, where b0 is the least significant bit.

## 10.3.3.39 Transmission probability

NOTE: Only for FDD.

Indicates the probability for a mobile to be allowed to transmit on a DCH controlled by DRAC procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission probability	MP		Real(0.125.. 1.0 by step of 0.125)	probability

## 10.3.3.40 Transport channel capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
<b>Downlink transport channel capability information elements</b>				
Max no of bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks received at an arbitrary time instant
Max convolutionally coded bits received	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all convolutionally coded transport blocks received at an arbitrary time instant
Max turbo coded bits received	CV-turbo_dec_sup		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all turbo coded transport blocks received at an arbitrary time instant
Maximum number of simultaneous transport channels	MP		Integer(4, 8, 16, 32)	
Maximum number of simultaneous CCTrCH	MP		Integer (1..8)	
Max no of received transport blocks	MP		Integer(4, 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks received within TTIs that end at within the same 10ms interval
Maximum number of TFC in the TFCS	MP		Integer(16, 32, 48, 64, 96, 128, 256, 512, 1024)	
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)	
Support for turbo decoding	MP		Boolean	TRUE means supported
<b>Uplink transport channel capability information elements</b>				
Max no of bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all transport blocks transmitted at an arbitrary time instant
Max convolutionally coded bits transmitted	MP		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480,	Maximum sum of number of bits of all convolutionally coded transport blocks transmitted at an arbitrary time instant

			40960, 81920, 163840)	
Max turbo coded bits transmitted	CV- <i>turbo_enc_sup</i>		Integer(640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840)	Maximum sum of number of bits of all turbo coded transport blocks transmitted at an arbitrary time instant
Maximum number of simultaneous transport channels	MP		Integer(2, 4, 8, 16, 32)	
Maximum number of simultaneous CCTrCH of DCH type	CH- <i>tdd_req_sup</i>		Integer (1..8)	
Max no of transmitted transport blocks	MP		Integer(2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512)	Maximum total number of transport blocks transmitted within TTIs that start at the same time
Maximum number of TFC in the TFCS	MP		Integer(4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024)	
Maximum number of TF	MP		Integer(32, 64, 128, 256, 512, 1024)	
Support for turbo encoding	MP		Boolean	TRUE means supported

Condition	Explanation
<i>turbo_dec_sup</i>	The IE <u>Presence</u> is mandatory <u>present</u> if IE Support of turbo decoding = True. Otherwise this field is not needed in the message.
<i>turbo_enc_sup</i>	The IE <u>Presence</u> is mandatory <u>present</u> if IE Support of turbo encoding = True. Otherwise this field is not needed in the message.
<i>tdd_req_sup</i>	The IE <u>Presence</u> is mandatory <u>present</u> if IE Multi-mode capability has the value "TDD" or "FDD/TDD" and a TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

10.3.3.41 UE multi-mode/multi-RAT capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
<b>Multi-RAT capability</b>				
Support of GSM	MP		Boolean	
Support of multi-carrier	MP		Boolean	
Multi-mode capability	MP		Enumerated (TDD, FDD, FDD/TDD)	

10.3.3.42 UE radio access capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
ICS version	MP		Enumerated(R99, REL-4)	Indicates the release version of [42]-2 (Implementation Conformance Statement (ICS) proforma specification) that is applicable for the UE.	Value REL-4 added in REL-4
PDCP capability	MP		PDCP capability 10.3.3.24		
RLC capability	MP		RLC capability 10.3.3.34		
Transport channel capability	MP		Transport channel capability 10.3.3.40		
RF capability FDD	OP		RF capability FDD 10.3.3.33		
RF capability TDD	OP	1 to 2	RF capability TDD 10.3.3.33b	One "TDD RF capability" entity shall be included for every Chip rate capability supported.	Multi=2 is included in REL-4
Physical channel capability	MP		Physical channel capability 10.3.3.25		
UE multi-mode/multi-RAT capability	MP		UE multi-mode/multi-RAT capability 10.3.3.41		
Security capability	MP		Security capability 10.3.3.37		
UE positioning capability	MP		UE positioning capability 10.3.3.45		
Measurement capability	CH- fdd_req_su p		Measurement capability 10.3.3.21		

Condition	Explanation
fdd_req_sup	The IE_Presence is mandatory present if IE Multi-mode capability has the value "FDD" or "FDD/TDD" and a FDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.

## 10.3.3.42a UE radio access capability extension

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Frequency band specific capability list	MP	1 to <maxFreqbandsFDD>		
>Frequency band	MP		Enumerated(FDD2100, FDD1900)	At least one spare value is needed
>RF capability FDD extension	MD		RF capability FDD extension 10.3.3.33a	the default values are the same values as in the immediately preceding IE "RF capability FDD extension"; the first occurrence is MP
>Measurement capability extension	MP		Measurement capability extension 10.3.3.21a	

## 10.3.3.43 UE Timers and Constants in connected mode

This information element specifies timer- and constants values used by the UE in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T301	MD		Integer(100, 200 .. 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 2000. This IE should not be used by the UE in this release of the protocol.
N301	MD		Integer(0..7)	Default value is 2. This IE should not be used by the UE in this release of the protocol.
T302	MD		Integer(100, 200... 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 4000.
N302	MD		Integer(0..7)	Default value is 3.
T304	MD		Integer(100, 200, 400, 1000, 2000)	Value in milliseconds. Default value is 2000. At least one spare value is needed. Note 1.
N304	MD		Integer(0..7)	Default value is 2. Note 1.
T305	MD		Integer(5, 10, 30, 60, 120, 360, 720, infinity)	Value in minutes. Default value is 30. Infinity means no update
T307	MD		Integer(5, 10, 15, 20, 30, 40, 50)	Value in seconds. Default value is 30.
T308	MD		Integer(40, 80, 160, 320)	Value in milliseconds. Default value is 160. Note 1.
T309	MD		Integer(1...8)	Value in seconds. Default value is 5. Note 1.
T310	MD		Integer(40 .. 320 by step of 40)	Value in milliseconds. Default value is 160. Note 1.
N310	MD		Integer(0 .. 7)	Default value is 4. Note 1.
T311	MD		Integer(250 .. 2000 by step of 250)	Value in milliseconds. Default value is 2000. Note 1.
T312	MD		Integer (0..15)	Value in seconds. Default value is 1.
N312	MD		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1.
T313	MD		Integer (0..15)	Value in seconds. Default value is 3. Note 1.
N313	MD		Integer (1, 2, 4, 10, 20, 50, 100, 200)	Default value is 20. Note 1.
T314	MD		Integer(0, 2, 4, 6, 8, 12, 16, 20)	Value in seconds. Default value is 12. Note 1.
T315	MD		Integer	Value in seconds. Default



			(0,10, 30, 60, 180, 600, 1200, 1800)	value is 180. Note 1.
N315	MD		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1. Note 1.
T316	MD		Integer(0, 10, 20, 30, 40, 50, infinity)	Value in seconds. Default value is 30.
T317	MD		Integer (0,10, 30, 60, 180, 600, 1200, 1800)	Value in seconds Default value is 180.

NOTE 1: If the value of SIB1 changes, the UE shall re-read SIB1 and use the new value of the parameter, if modified.

#### 10.3.3.44 UE Timers and Constants in idle mode

This information element specifies timer- and constant values used by the UE in idle mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
T300	MP		Integer(10 0, 200... 2000 by step of 200, 3000, 4000, 6000, 8000)	Value in milliseconds. Default value is 1000.
N300	MP		Integer(0.. 7)	Default value is 3.
T312	MP		Integer(0 .. 15)	Value in seconds. Default value is 1.
N312	MP		Integer (1, 50, 100, 200, 400, 600, 800, 1000)	Default value is 1.

## 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

## 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(cha nge of URA, periodic URA update, re-entered service area)	At least one spare value needed.

## 10.3.3.47 U-RNTI

The U-RNTI (UTRAN Radio Network Temporary Identity) is allocated to an UE having a RRC connection and identifies the UE within UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SRNC identity	MP		bit string(12)	
S-RNTI	MP		bit string(20)	

## 10.3.3.48 U-RNTI Short

The U-RNTI (UTRAN Radio Network Temporary Identity) is allocated to an UE having a RRC connection and identifies the UE within UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SRNC identity	MP		bit string(12)	
S-RNTI 2	MP		bit string(10)	

### 10.3.3.49 UTRAN DRX cycle length coefficient

A coefficient in the formula to count the paging occasions to be used by a specific UE (specified in [4]).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DRX cycle length coefficient	MP		Integer(3..9)	Refers to 'k' in the formula as specified in [4], Discontinuous reception

### 10.3.3.50 Wait time

Wait time defines the time period the UE has to wait before repeating the rejected procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Wait time	MP		Integer(0..15)	Wait time in seconds The value 0 indicates that repetition is not allowed.

## 10.3.4 Radio Bearer Information elements

### 10.3.4.0 Default configuration identity

This information element identifies a default radio parameter configuration.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Default configuration identity	MP		Integer (0..9)	The corresponding default configurations are specified in 13.7

### 10.3.4.1 Downlink RLC STATUS info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timer_Status_Prohibit	OP		Integer(10..50 by step of 10, 550..1000 by step of 50)	Minimum time in ms between STATUS reports
Timer_EPC	OP		Integer(50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 300, 400, 500, 700, 900)	Time in ms
Missing PDU Indicator	MP		Boolean	Value true indicates that UE should send a STATUS report for each missing PDU that is detected
Timer_STATUS_periodic	OP		Integer(100, 200, 300, 400, 500, 750, 1000, 2000)	Time in milliseconds

#### 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	Version
Support for lossless SRNS relocation	CV- <i>LosslessCriteria</i>		Boolean	TRUE means support	
Max PDCP SN window size	CV- <i>Lossless</i>		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 <maxPDC PAlgoType >			
>CHOICE <i>algorithm type</i>	MP				
>>RFC 2507				Header compression according to IETF standard RFC 2507	
>>>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".	

>>RFC 3095				Header compression according to IETF standard RFC 3095	REL-4
>>>Max_CID	MD		Integer (1..16383)	Highest context ID number to be used by the compressor. Default value is 15.	REL-4
>>>Profiles	MP	1 to <maxROHC-Profiles>		Profiles supported by the decompressor.	REL-4
>>>>Profile instance	MP		Integer(1 .. 3)	Supported profile types. At least four spare values.	REL-4
>>>MRRU	MD		Integer (0 .. 65535)	Maximum reconstructed reception unit. Default value is 0 (no segmentation).	REL-4
>>>Packet_Sizes_Allowed	OP	1 to <maxROHC-PacketSize s>		List of packet sizes that are allowed to be produced by RFC 3095.	REL-4
>>>>Packet size	MP		Integer (2 .. 1500)	Packet size as defined in RFC 3095.	REL-4
>>>Reverse-Decompression_Depth	MD		Integer (0..65535)	Determines whether reverse decompression should be used or not and the maximum number of packets that can be reverse decompressed by the decompressor. Default value is 0 (reverse decompression shall not be used).	REL-4

Condition	Explanation
<i>LosslessCriteria</i>	This IE is <u>mandatory</u> present only if the IE "RLC mode" is "Acknowledged" and the IE "In-sequence delivery" is "True" <u>and not needed otherwise.</u>
<i>Lossless</i>	This IE <u>is mandatory</u> shall be present if the IE "Support for lossless SRNS relocation" Is TRUE, otherwise it is <u>not needed</u> shall be absent.

10.3.4.3 PDCP SN info

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Receive PDCP sequence number	MP		Integer(0..65535)	The PDCP sequence number, which the sender of the message is expecting next to be received.

## 10.3.4.4 Polling info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timer_poll_prohibit	OP		Integer(10..50 by step of 10, 600..1000 by step of 50)	Minimum time between polls in ms
Timer_poll	OP		Integer(10..50 by step of 10, 600..1000 by step of 50)	Time in ms.
Poll_PDU	OP		Integer(1,2,4,8,16,32,64,128)	Number of PDUs, interval between pollings
Poll_SDU	OP		Integer(1,4,16,64)	Number of SDUs, interval between pollings
Last transmission PDU poll	MP		Boolean	TRUE indicates that poll is made at last PDU in transmission buffer
Last retransmission PDU poll	MP		Boolean	TRUE indicates that poll is made at last PDU in retransmission buffer
Poll_Window	OP		Integer(50,60,70,80,85,90,95,99)	Percentage of transmission window, threshold for polling
Timer_poll_periodic	OP		Integer(100, 200, 300, 400, 500, 750, 1000, 2000)	Time in milliseconds Timer for periodic polling.

## 10.3.4.5 Predefined configuration identity

This information element identifies a pre- defined radio parameter configuration.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Predefined radio configuration identity	MP		Integer (0..15)	

## 10.3.4.6 Predefined configuration value tag

This information element is used to identify different versions of a radio bearer configuration as may be used within one PLMN e.g. to support different UTRAN implementations.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Predefined configuration value tag	MP		Integer(0..15)	

## 10.3.4.7 Predefined RB configuration

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

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

#### 10.3.4.8 RAB info

This IE contains information used to uniquely identify a radio access bearer.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB identity	MP		RAB identity 10.3.1.14	
CN domain identity	MP		CN domain identity 10.3.1.1	
NAS Synchronization Indicator	OP		NAS Synchronization indicator 10.3.4.12	
Re-establishment timer	MP		Re-establishment timer 10.3.3.30	

#### 10.3.4.9 RAB info Post

This IE contains information used to uniquely identify a radio access bearer.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB identity	MP		RAB identity 10.3.1.14	
CN domain identity	MP		CN domain identity 10.3.1.1	
NAS Synchronization Indicator	OP		NAS Synchronization indicator 10.3.4.12	



## 10.3.4.10 RAB information for setup

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB info	MP		RAB info 10.3.4.8	
RB information to setup list	MP	1 to <maxRBpe rRAB>		
>RB information to setup	MP		RB information to setup 10.3.4.20	

## 10.3.4.11 RAB information to reconfigure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB identity	MP		RAB Identity 10.3.1.14	
CN domain identity	MP		CN domain identity 10.3.1.1	
NAS synchronization indicator	MP		NAS Synchronizat ion info 10.3.4.12	

## 10.3.4.12 NAS Synchronization indicator

A container for non-access stratum information to be transferred transparently through UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
NAS Synchronization indicator	MP		Bitstring(4)	The bits are numbered b1-b4, where b1 is the least significant bit.

## 10.3.4.13 RB activation time info

This IE contains the time, in terms of RLC sequence numbers, when a certain configuration shall be activated, for a number of radio bearers.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Radio bearer activation time	MP	1 to <maxRB>		
>RB identity	MP		RB identity 10.3.4.16	
>RLC sequence number	MP		Integer (0.. 4095)	RLC SN [16] . Used for radio bearers mapped on RLC AM and UM

## 10.3.4.14 RB COUNT-C MSB information

The MSB of the COUNT-C values of the radio bearer.

Information Element/Group name	Needed	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
COUNT-C-MSB-uplink	MP		Integer (0.. $2^{25}-1$ )	25 MSBs from COUNT-C associated to this RB
COUNT-C-MSB-downlink	MP		Integer (0.. $2^{25}-1$ )	25 MSBs from COUNT-C associated to this RB

#### 10.3.4.15 RB COUNT-C information

The COUNT-C values of the radio bearer.

Information Element/Group name	Needed	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
COUNT-C-uplink	MP		Integer (0.. $2^{32}-1$ )	
COUNT-C-downlink	MP		Integer (0.. $2^{32}-1$ )	

#### 10.3.4.16 RB identity

An identification number for the radio bearer affected by a certain message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		Integer(1..32)	Values 1-4 shall only be used for signalling radio bearers. The IE value minus one shall be used as BEARER in the ciphering algorithm.

#### 10.3.4.17 RB information to be affected

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
RB mapping info	MP		RB mapping info 10.3.4.21	

## 10.3.4.18 RB information to reconfigure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
PDCP info	OP		PDCP info 10.3.4.2	
PDCP SN info	OP		PDCP SN info 10.3.4.3	PDCP sequence number info from the network. Present only in case of lossless SRNS relocation.
RLC info	OP		RLC info 10.3.4.23	
RB mapping info	OP		RB mapping info 10.3.4.21	
RB stop/continue	OP		Enumerated( stop, continue)	

## 10.3.4.19 RB information to release

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	

## 10.3.4.20 RB information to setup

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
PDCP info	OP		PDCP info 10.3.4.2	
CHOICE <i>RLC info type</i>	MP			
>RLC info			RLC info 10.3.4.23	
>Same as RB			RB identity 10.3.4.16	Identity of RB with exactly the same RLC info IE values
RB mapping info	MP		RB mapping info 10.3.4.21	

NOTE This information element is included within IE "Predefined RB configuration"

## 10.3.4.21 RB mapping info

A multiplexing option for each possible transport channel this RB can be multiplexed on.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Information for each multiplexing option	MP	1 to <maxRBMuxOptions>		
>RLC logical channel mapping indicator	CV-UL-RLCLogicalChannels		Boolean	TRUE indicates that the first logical channel shall be used for data PDUs and the second logical channel shall be used for control PDUs. FALSE indicates that control and data PDUs can be sent on either of the two logical channels. This parameter is not used in this release and shall be set to TRUE.
>Number of uplink RLC logical channels	CV-UL-RLC info	1 to MaxLoCHperRLC		1 or 2 logical channels per RLC entity or radio bearer RLC [16]
>>Uplink transport channel type	MP		Enumerated(DCH,RACH, CPCH,USCH)	CPCH is FDD only USCH is TDD only
>>ULTransport channel identity	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	This is the ID of a DCH or USCH (TDD only) that this RB could be mapped onto.
>>Logical channel identity	OP		Integer(1..15)	This parameter is used to distinguish logical channels multiplexed by MAC on a transport channel.
>>CHOICE RLC size list	MP			The RLC sizes that are allowed for this logical channel For radio bearers mapped to RACH, "Explicit list" is the only valid choice. The UE shall regard all other choices as undefined IE values and handle these as specified in clause 9.
>>>All			Null	All RLC sizes listed in the <i>Transport Format Set</i> . 10.3.5.23
>>>Configured			Null	The RLC sizes configured for this logical channel in the <i>Transport Format Set</i> . 10.3.5.23 if present in this message or in the previously stored configuration otherwise
>>>Explicit List		1 to <maxTF>		Lists the RLC sizes that are valid for the logical channel.
>>>>RLC size index	MP		Integer(1..maxTF)	The integer number is a reference to the <i>RLC size</i> which arrived at that position in the <i>Transport Format Set</i> 10.3.5.23
>>MAC logical channel priority	MP		Integer(1..8)	This is priority between a user's different RBs (or logical channels). [15]
>Downlink RLC logical channel info	CV-DL-RLC info			
>>Number of downlink RLC logical channels	MD	1 to MaxLoCHperRLC		1 or 2 logical channels per RLC entity or radio bearer RLC [16] Default value is that parameter values for DL are exactly the same as for corresponding UL

				logical channel. In case two multiplexing options are specified for the UL, the first options shall be used as default for the DL. As regards to the IE "Channel type", rule is specified in 8.6.4.8.
>>>Downlink transport channel type	MP		Enumerated(DCH,FACH, DSCH,DCH+ DSCH)	
>>>DL DCH Transport channel identity	CV-DL-DCH		Transport channel identity 10.3.5.18	
>>>DL DSCH Transport channel identity	CV-DL-DSCH		Transport channel identity 10.3.5.18	
>>>Logical channel identity	OP		Integer(1..15 )	16 is reserved

Condition	Explanation
<i>UL-RLC info</i>	If "CHOICE <i>Uplink RLC mode</i> " in IE "RLC info" is present this IE is <u>mandatory present</u> MP. Otherwise the IE is not needed.
<i>DL-RLC info</i>	If "CHOICE <i>Downlink RLC mode</i> " in IE "RLC info" is present this IE is <u>mandatory present</u> MP. Otherwise the IE is not needed.
<i>UL-RLCLogicalChannels</i>	If "Number of uplink RLC logical channels" in IE "RB mapping info" is 2, then this IE is <u>mandatory present</u> . Otherwise this IE is not needed.
<i>UL-DCH/USCH</i>	If IE "Uplink transport channel type" is equal to "DCH" or "USCH" (TDD only) this IE is <u>mandatory present</u> MP. Otherwise the IE is not needed.
<i>DL-DCH</i>	If IE "Downlink transport channel type" is equal to "DCH" or "DCH+DSCH" this IE is <u>mandatory present</u> MP. Otherwise the IE is not needed.
<i>DL-DSCH</i>	If IE "Downlink transport channel type" is equal to "DSCH" or "DCH+DSCH" this IE is <u>mandatory present</u> MP. Otherwise the IE is not needed.

10.3.4.22 RB with PDCP information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.16	
PDCP SN info	MP		PDCP SN info 10.3.4.3	PDCP sequence number info from the sender of the message for lossless SRNS relocation.

## 10.3.4.23 RLC info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Uplink RLC mode</i>	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used.
>AM RLC				
>>Transmission RLC discard	MP		Transmission RLC discard 10.3.4.25	
>>Transmission window size	MP		Integer(1,8,16,32,64,128,256,512,768,1024,1536,2047,2560,3072,3584,4095)	Maximum number of RLC PUs sent without getting them acknowledged. This parameter is needed if acknowledged mode is used. UE shall also assume that the UTRAN receiver window is equal to this value.
>>Timer_RST	MP		Integer(50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 700, 800, 900, 1000)	Elapsed time in milliseconds. It is used to trigger the retransmission of RESET PDU.
>>Max_RST	MP		Integer(1, 4, 6, 8, 12, 16, 24, 32)	The maximum number of retransmission of RESET PDU
>>Polling info	OP		Polling info 10.3.4.4	
>UM RLC				
>>Transmission RLC discard	OP		Transmission RLC discard 10.3.4.25	
>TM RLC				
>>Transmission RLC discard	OP		Transmission RLC discard 10.3.4.25	
>>Segmentation indication	MP		Boolean	TRUE indicates that segmentation is performed.
CHOICE <i>Downlink RLC mode</i>	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used
>AM RLC				
>>In-sequence delivery	MP		Boolean	TRUE indicates that RLC shall preserve the order of higher layer PDUs when these are delivered. FALSE indicates that receiving RLC entity could allow SDUs to be delivered to the higher layer in different order than submitted to RLC sublayer at the transmitting side.
>>Receiving window size	MP		Integer(1,8,16,32,64,128,256,512,768,1024,1536,2047,2560,3072,3584,4095)	Maximum number of RLC PUs allowed to be received. This parameter is needed if acknowledged mode is used. UE shall also assume that the UTRAN transmitter window is equal to this value
>>Downlink RLC status Info	MP		Downlink RLC status info 10.3.4.1	
>UM RLC				(No data)
>TM RLC				

>>Segmentation indication	MP		Boolean	TRUE indicates that segmentation is performed.
---------------------------	----	--	---------	--

NOTE This information element is included within IE "Predefined RB configuration"

#### 10.3.4.24 Signalling RB information to setup

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MD		RB identity 10.3.4.16	Default value is specified in subclause 8.6.4.1
CHOICE <i>RLC info type</i>	MP			
>RLC info			RLC info 10.3.4.23	
>Same as RB			RB identity 10.3.4.16	Identity of RB with exactly the same RLC info IE values
RB mapping info	MP		RB mapping info 10.3.4.21	

NOTE This information element is included within IE "Predefined RB configuration"

## 10.3.4.25 Transmission RLC Discard

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>SDU Discard Mode</i>	MP			Different modes for discharge the RLC buffer on the transmitter side; "Timer based with explicit signalling", "Timer based without explicit signalling", "Discard after Max_DAT retransmissions" or "No_discard". For unacknowledged mode and transparent mode, only Timer based without explicit signalling is applicable. If "No_discard" is used, reset procedure shall be done after Max_DAT retransmissions
>Timer based explicit				
>>Timer_MRW	MP		Integer(50,60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 300, 400, 500, 700, 900)	Elapsed time in milliseconds. It is used to trigger the retransmission of a STATUS PDU containing an MRW SUFI field
>>Timer_discard	MP		Integer(100, 250, 500, 750, 1000, 1250, 1500, 1750, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 7500)	Elapsed time in milliseconds before a SDU is discarded.
>>MaxMRW	MP		Integer(1, 4, 6, 8, 12, 16, 24, 32)	It is the maximum value for the number of retransmissions of a MRW command
>Timer based no explicit				
>>Timer_discard	MP		Integer(10,20,30,40,50,60,70,80,90,100)	Elapsed time in milliseconds before a SDU is discarded.
>Max DAT retransmissions				
>>Max_DAT	MP		Integer(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40)	Number of retransmissions of a PDU before a SDU is discarded.
>>Timer_MRW	MP		Integer(50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 300, 400, 500, 700, 900)	Elapsed time in milliseconds. It is used to trigger the retransmission of a STATUS PDU containing an MRW SUFI field
>>MaxMRW	MP		Integer(1, 4, 6, 8, 12, 16, 24, 32)	It is the maximum value for the number of retransmissions of a MRW command
>No discard				
>>Max_DAT	MP		Integer(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30,	Number of retransmissions of a PDU before the RLC entity is reset.



			35, 40)	
--	--	--	---------	--

<b>CHOICE SDU Discard Mode</b>	<b>Condition under which the given SDU Discard Mode is chosen</b>
Timer based explicit	If the modes for discharge of the RLC buffer on the transmitter side is "Timer based with explicit signalling"
Timer based no explicit	If the modes for discharge of the RLC buffer on the transmitter side is "Timer based without explicit signalling" For unacknowledged mode, only Timer based without explicit signalling is applicable.
Max DAT retransmissions	If the modes for discharge of the RLC buffer on the transmitter side is "Discard after Max_DAT retransmissions"
No discard	If the modes for discharge the of RLC buffer on the transmitter side is "Reset procedure shall be done after Max_DAT retransmissions"

### 10.3.5 Transport CH Information elements

#### 10.3.5.1 Added or Reconfigured DL TrCH information

<b>Information Element/Group name</b>	<b>Need</b>	<b>Multi</b>	<b>Type and reference</b>	<b>Semantics description</b>
Downlink transport channel type	MP		Enumerated(DCH,DSCH)	
DL Transport channel identity	MP		Transport channel identity 10.3.5.18	
<b>CHOICE DL parameters</b>				
>Explicit				
>>TFS	MP		Transport Format Set 10.3.5.23	
>SameAsUL				
>>Uplink transport channel type	MP		Enumerated(DCH,USCH)	USCH is TDD only
>>UL TrCH identity	MP		Transport channel identity 10.3.5.18	Same TFS applies as specified for indicated UL TrCH
DCH quality target	OP		Quality target 10.3.5.10	
Transparent mode signalling info	CV- MessageType		Transparent mode signalling info 10.3.5.17	This IE is not used in RB RELEASE message nor RB RECONFIGURATION message

<b>Condition</b>	<b>Explanation</b>
MessageType	This IE is <u>not needed</u> absent in Radio Bearer Release message and Radio Bearer Reconfiguration message. Otherwise it is <u>optional</u> OPTIONAL.

## 10.3.5.2 Added or Reconfigured UL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink transport channel type	MP		Enumerated(DCH,USCH)	USCH is TDD only
UL Transport channel identity	MP		Transport channel identity 10.3.5.18	
TFS	MP		Transport Format Set 10.3.5.23	

NOTE This information element is included within IE "Predefined RB configuration"

## 10.3.5.3 CPCH set ID

NOTE: Only for FDD.

This information element indicates that this transport channel may use any of the Physical CPCH channels defined in the CPCH set info, which contains the same CPCH set ID. The CPCH set ID associates the transport channel with a set of PCPCH channels defined in a CPCH set info IE and a set of CPCH persistency values. The CPCH set info IE(s) and the CPCH persistency values IE(s) each include the CPCH set ID and are part of the SYSTEM INFORMATION message

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH set ID	MP		Integer(1...maxCPCHsets)	Identifier for CPCH set info and CPCH persistency value messages

## 10.3.5.4 Deleted DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink transport channel type	MP		Enumerated(DCH,DSCH)	
DL Transport channel identity	MP		Transport channel identity 10.3.5.18	

## 10.3.5.5 Deleted UL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink transport channel type	MP		Enumerated(DCH,USCH)	USCH is TDD only
UL Transport channel identity	MP		Transport channel identity 10.3.5.18	

## 10.3.5.6 DL Transport channel information common for all transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SCCPCH TFCS	OP		Transport Format Combination Set 10.3.5.20	This IE should be absent within IE "Predefined RB configuration"
CHOICE <i>mode</i>	MP			Although this IE is not always required, need is MP to align with ASN.1
>FDD				
>>CHOICE <i>DL parameters</i>	OP			
>>>Explicit				
>>>>DL DCH TFCS	MP		Transport Format Combination Set 10.3.5.20	Although this IE is not always required, need is MP to align with ASN.1
>>>SameAsUL				(no data)
>TDD				
>>Individual DL CCTrCH information	OP	1 to <maxCCTrCH>		
>>>DL TFCS Identity	MP		Transport format combination set identity 10.3.5.21	Identifies a special CCTrCH for shared or dedicated channels.
>>>CHOICE <i>DL parameters</i>	MP			
>>>>Independent				
>>>>>DL TFCS	MP		Transport format combination set 10.3.5.20	
>>>>SameAsUL				
>>>>>UL DCH TFCS Identity	MP		Transport format combination set identity 10.3.5.21	Same TFCS applies as specified for the indicated UL DCH TFCS identity except for information applicable for UL only

NOTE This information element is included within IE "Predefined TrCh configuration"

## 10.3.5.7 DRAC Static Information

NOTE: Only for FDD.

Contains static parameters used by the DRAC procedure. Meaning and use is described in subclause 14.8.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission Time Validity	MP		Integer(1..256)	number of frames
Time duration before retry	MP		Integer(1..256)	number of frames
DRAC Class Identity	MP		Integer(1..maxDRACclasses)	Indicates the class of DRAC parameters to use in SIB10 message

10.3.5.8 Power Offset Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Gain Factors</i>	MP			
>Signalled <i>Gain Factors</i>				
>>CHOICE <i>mode</i>				
>>>FDD				
>>>>Gain Factor $\beta_c$	MP		Integer (0.. 15)	For UL DPCCH or control part of PRACH or PCPCH
>>>TDD				(no data)
>>Gain Factor $\beta_d$	MP		Integer (0..15)	For UL DPDCH or data part of PRACH or PCPCH in FDD and all uplink channels in TDD
>>Reference TFC ID	OP		Integer (0..3)	If this TFC is a reference TFC, indicates the reference ID.
>Computed <i>Gain Factors</i>				
>>Reference TFC ID	MP		Integer (0.. 3)	Indicates the reference TFC Id of the TFC to be used to calculate the gain factors for this TFC. In case of using computed gain factors, at least one signalled gain factor is necessary for reference.
CHOICE <i>mode</i>	MP			
>FDD				
>>Power offset P <sub>p-m</sub>	OP		Integer(-5..10)	In dB. Power offset between the last transmitted preamble and the control part of the message (added to the preamble power to receive the power of the message control part ) Needed only for PRACH
>TDD				(no data)

CHOICE <i>Gain Factors</i>	Condition under which the way to signal the <i>Gain Factors</i> is chosen
<i>Signalled Gain Factors</i>	The values for gain factors $\beta_c$ (only in FDD mode) and $\beta_d$ are signalled directly for a TFC.
<i>Computed Gain Factors</i>	The gain factors $\beta_c$ (only in FDD mode) and $\beta_d$ are computed for a TFC, based on the signalled settings for the associated reference TFC.

10.3.5.9 Predefined TrCH configuration

This information element concerns a pre- defined configuration of transport channel parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.24	
<b>Added or Reconfigured TrCH information</b>				
Added or Reconfigured UL TrCH information	MP	1 to <maxTrCH preconf>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.6	
<b>Downlink transport channels</b>				
Added or Reconfigured DL TrCH information	MP	1 to <maxTrCH preconf>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	

10.3.5.10 Quality Target

Information Element/Group name	Need	Multi	Type and reference	Semantics description
BLER Quality value	MP		Real(-6.3 ..0 by step of 0.1)	Signalled value is Log10(Transport channel BLER quality target)

10.3.5.11 Semi-static Transport Format Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Transmission time interval	MP		Integer(5, 10, 20, 40, 80, dynamic)	In ms. The value dynamic is only used in TDD mode. 5 is only applicable for the RACH in 1.28 Mcps TDD	REL-4
Type of channel coding	MP		Enumerated(No coding, Convolutional, Turbo)		
Coding Rate	CV-Coding		Enumerated(1/2, 1/3)		
Rate matching attribute	MP		Integer(1..hi RM)		
CRC size	MP		Integer(0, 8, 12, 16, 24)	in bits	

Condition	Explanation
Coding	This IE is <u>mandatory</u> only-present if IE "Type of channel coding" is "Convolutional" <u>and not needed otherwise</u>

10.3.5.12 TFCI Field 2 Information

This IE is used for signalling the mapping between TFCI (field 2) values and the corresponding TFC.

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE <i>Signalling method</i>	MP			
>TFCI range				
>>TFCI(field 2) range	MP	1 to <maxPDSCH-TFCIgroups>		
>>>Max TFCI(field2) value	MP		Integer(1..1023)	This is the Maximum value in the range of TFCI(field2) values for which the specified CTFC(field2) applies
>>>TFCS Information for DSCH (TFCI range method)	MP		TFCS Information for DSCH (TFCI range method) 10.3.5.14	
>Explicit				
>>TFCS explicit configuration	MP		TFCS explicit configuration 10.3.5.13	

## 10.3.5.13 TFCS Explicit Configuration

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE <i>TFCS representation</i>	MP			
>Complete reconfiguration				
>>TFCS complete reconfiguration information	MP		TFCS Reconfiguration/Addition information 10.3.5.15	
>Addition				
>>TFCS addition information	MP		TFCS Reconfiguration/Addition information 10.3.5.15	
>Removal				
>>TFCS removal information	MP		TFCS Removal Information 10.3.5.16	
>Replace				
>>TFCS removal information	MP		TFCS Removal Information 10.3.5.16	
>>TFCS addition information	MP		TFCS Reconfiguration/Addition information 10.3.5.15	

## 10.3.5.14 TFCS Information for DSCH (TFCl range method)

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE <i>CTFC Size</i>	MP			
>2 bit CTFC				
>>2bit CTFC	MP		Integer(0..3)	
>4 bit CTFC				
>>4bit CTFC	MP		Integer(0..15)	
>6 bit CTFC				
>>6 bit CTFC	MP		Integer(0..63)	
>8 bit CTFC				
>>8 bit CTFC	MP		Integer(0..255)	
>12 bit CTFC				
>>12 bit CTFC	MP		Integer(0..4095)	
>16 bit CTFC				
>>16 bit CTFC	MP		Integer(0..65535)	
>24 bit CTFC				
>>24 bit CTFC	MP		Integer(0..16777215)	

## 10.3.5.15 TFCS Reconfiguration/Addition Information

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE CTFC Size	MP			
>2 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>2bit CTFC	MP		Integer(0..3)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>4 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>4bit CTFC	MP		Integer(0..15)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>6 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>6 bit CTFC	MP		Integer(0..63)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>8 bit CTFC				
>>CTFC information	MP	1 to <MaxTFC>		
>>>8 bit CTFC	MP		Integer(0..255)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>12 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>12 bit CTFC	MP		Integer(0..4095)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>16 bit CTFC				
>>CTFC information	MP	1 to <maxTFC>		
>>>16 bit CTFC	MP		Integer(0..65535)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.
>24 bit CTFC				
>>CTFC information	MP	1 to <MaxTFC>		
>>>24 bit CTFC	MP		Integer(0..16777215)	
>>>Power offset Information	OP		Power Offset Information 10.3.5.8	Needed only for uplink physical channels.



## 10.3.5.16 TFCS Removal Information

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Removal TFCI information	MP	1 to <maxTFC>		
>TFCI	MP		Transport Format Combination (TFC) 10.3.5.19	In TDD 0 is a reserved value

## 10.3.5.17 Transparent mode signalling info

Information Element	Need	Multi	Type and reference	Semantics description
Type of message	MP		Enumerated (TRANSPORT FORMAT COMBINATION CONTROL)	Indicates which type of message sent on the transparent mode signalling DCCH
CHOICE <i>Transparent signalling mode</i>	MP			
>Mode 1				(no data)
>Mode 2				
>>Controlled transport channels list	MP	1 to <maxTrCH>		The transport channels that are effected by the rate control commands sent on this transparent mode DCCH
>>>UL Controlled transport channels	MP		Transport channel identity, 10.3.5.18	transport channel type = DCH

## 10.3.5.18 Transport channel identity

This information element is used to distinguish transport channels. Transport channels of different type (RACH, CPCH, USCH, FACH/PCH, DSCH or DCH) have separate series of identities. This also holds for uplink and downlink transport channel identities (i.e. for DCH). Depending on in which context a transport channel identity  $n$  that is sent, it will have different meaning

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport channel identity	MP		Integer(1..32)	

## 10.3.5.19 Transport Format Combination (TFC)

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport format combination	MP		Integer (0..1023)	

## 10.3.5.20 Transport Format Combination Set

Indicates the allowed combinations of already defined Transport formats and the mapping between these allowed TFCs and the corresponding TFCI values.

For TDD, different coded composite transport channels have independent transport format combination sets and thus independent TFCI values.

For FDD, Where the UE is assigned access to one or more DSCH transport channels, a TFCI(field2) is used to signal the transport format combination for the DSCH. The following two cases exist:

- Case 1:  
Using one TFCI-word on the physical layer. A logical split determines the available number of transport format combinations for DCH and DSCH.
- Case 2:  
Using split TFCI on the physical layer. Two TFCI-words, each having a static length of five bits, are used.

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
CHOICE <i>TFCI signalling</i>	MP			'Normal' : meaning no split in the TFCI field (either 'Logical' or 'Hard') 'Split' : meaning there is a split in the TFCI field (either 'Logical' or 'Hard'). This value is only valid for FDD downlink when using DSCH.
>Normal				
>>TFCI Field 1 Information	MP		TFCS explicit Configuration 10.3.5.13	
>Split				
>>Split type	OP		Enumerated ('Hard', 'Logical')	'Hard' : meaning that TFCI (field 1) and TFCI (field 2) are each 5 bits long and each field is block coded separately. 'Logical' : meaning that on the physical layer TFCI (field 1) and TFCI (field 2) are concatenated, field 1 taking the most significant bits and field 2 taking the least significant bits). The whole is then encoded with a single block code.
>>Length of TFCI(field2)	OP		Integer (1..10)	This IE indicates the length measured in number of bits of TFCI(field2)
>>TFCI Field 1 Information	OP		TFCS explicit Configuration 10.3.5.13	
>>TFCI Field 2 Information	OP		TFCI field 2 information 10.3.5.12	

CHOICE <i>TFCI signalling</i>	Condition under which <i>TFCI signalling type</i> is chosen
Normal	It is chosen when no split in the TFCI field.
Split	It is chosen when split in the TFCI field. This value is only valid for FDD downlink when using DSCH.

### 10.3.5.21 Transport Format Combination Set Identity

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Integer (1..8)	Indicates the identity of every TFCS within a UE. Default value is 1.
Shared Channel Indicator	MP		Boolean	TRUE indicates the use of shared channels. Default is false.

### 10.3.5.22 Transport Format Combination Subset

Indicates which Transport format combinations in the already defined Transport format combination set are allowed.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
<i>CHOICE Subset representation</i>	MP			
>Minimum allowed Transport format combination index			Transport format combination 10.3.5.19	
>Allowed transport format combination list		1 to <maxTFC>		
>>Allowed transport format combination	MP		Transport format combination 10.3.5.19	
>Non-allowed transport format combination list		1 to <maxTFC>		
>>Non-allowed transport format combination	MP		Transport format combination 10.3.5.19	
>Restricted TrCH information		1 to <maxTrCH>		
>>Uplink transport channel type	MP		Enumerated(DCH, USCH)	USCH is TDD only
>>Restricted UL TrCH identity	MP		Transport channel identity 10.3.5.18	
>>>Allowed TFIs	OP	1 to <maxTF>		
>>>>Allowed TFI	MP		Integer(0..31)	
>Full transport format combination set				(No data)

## 10.3.5.23 Transport Format Set

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Transport channel type</i> >Dedicated transport channels	MP			The transport channel that is configured with this TFS is of type DCH
>>Dynamic Transport Format Information	MP	1 to <maxTF>		
>>>RLC Size	MP		Integer(0..4992)	Unit is bits
>>>Number of TBs and TTI List	MP	1 to <maxTF>		Present for every valid number of TB's (and TTI) for this RLC Size.
>>>>Transmission Time Interval	CV- <i>dynamicTTI</i>		Integer(10,20,40,80)	Unit is ms.
>>>>Number of Transport blocks	MP		Integer(0..512)	
>>>CHOICE <i>Logical Channel List</i>	MP			The logical channels that are allowed to use this RLC Size
>>>>ALL			Null	All logical channels mapped to this transport channel.
>>>>Configured			Null	The logical channels configured to use this RLC size in the <i>RB mapping info</i> . 10.3.4.21 if present in this message or in the previously stored configuration otherwise
>>>>Explicit List		1 to 15		Lists the logical channels that are allowed to use this RLC size.
>>>>>RB Identity	MP		RB identity 10.3.4.16	
>>>>>LogicalChannel	CH-UL- <i>RLCLogicalChannels</i>		Integer(0..1)	Indicates the relevant UL logical channel for this RB. "0" corresponds to the first, "1" corresponds to the second UL logical channel configured for this RB in the IE "RB mapping info".
>>Semi-static Transport Format Information	MP		Semi-static Transport Format Information 10.3.5.11	
>Common transport channels				The transport channel that is configured with this TFS is of a type not equal to DCH
>>Dynamic Transport Format Information	MP	1 to <maxTF>		Note
>>>RLC Size	MP		Integer(0..4992)	Unit is bits
>>>Number of TBs and TTI List	MP	1 to <maxTF>		Present for every valid number of TB's (and TTI) for this RLC Size.
>>>>Number of Transport blocks	MP		Integer(0..512)	
>>>>CHOICE <i>mode</i>	MP			
>>>>>FDD				(no data)
>>>>>TDD				
>>>>>>Transmission Time Interval	CV- <i>dynamicTTI</i>		Integer(10,20,40,80)	Unit is ms.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
	/			
>>>CHOICE <i>Logical Channel List</i>	MP			The logical channels that are allowed to use this RLC Size. For radio bearers mapped to RACH, the UE shall regard "Explicit list" as an undefined IE value and handle these as specified in clause 9.
>>>>ALL			Null	All logical channels mapped to this transport channel.
>>>>Configured			Null	The logical channels configured to use this RLC size in the <i>RB mapping info</i> . 10.3.4.21 if present in this message or in the previously stored configuration otherwise
>>>>Explicit List		1 to 15		Lists the logical channels that are allowed to use this RLC size.
>>>>RB Identity	MP		RB identity 10.3.4.16	
>>>>LogicalChannel	<i>CV-UL-RLCLogicalChannels</i>		Integer(0..1)	Indicates the relevant UL logical channel for this RB. "0" corresponds to the first, "1" corresponds to the second UL logical channel configured for this RB in the IE "RB mapping info".
>>Semi-static Transport Format Information	MP		Semi-static Transport Format Information 10.3.5.11	

Condition	Explanation
<i>dynamicTTI</i>	This IE is <u>mandatory present</u> included-if dynamic TTI usage is indicated in IE Transmission Time Interval in Semi-static Transport Format Information. Otherwise it is not needed.
<i>UL-RLCLogicalChannels</i>	If "Number of uplink RLC logical channels" in IE "RB mapping info" in this message is 2 or the IE "RB mapping info" is not present in this message and 2 UL logical channels are configured for this RB, then this IE is <u>mandatory present</u> . Otherwise this IE is not needed.

NOTE: The parameter "rate matching attribute" is in line with the RAN WG1 specifications. However, it is not currently in line with the description in [34].

## 10.3.5.24 UL Transport channel information common for all transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PRACH TFCS	OP		Transport format combination set 10.3.5.20	This IE should not be included in this version of the protocol.
CHOICE <i>mode</i> >FDD	OP			
>>TFC subset	MD		Transport Format Combination Subset 10.3.5.22	Default value is the complete existing set of transport format combinations
>>UL DCH TFCS	MP		Transport formation combination set 10.3.5.20	
>TDD				
>>Individual UL CCTrCH information	OP	1 to <maxCCTrCH>		
>>>UL TFCS Identity	MP		Transport format combination set identity 10.3.5.21	Identifies a special CCTrCH for shared or dedicated channels.
>>>UL TFCS	MP		Transport format combination set 10.3.5.20	
>>>TFC subset	MD		Transport Format Combination Subset 10.3.5.22	Default value is the complete existing set of transport format combinations

NOTE This information element is included within IE "Predefined TrCh configuration"

## 10.3.6 Physical CH Information elements

## 10.3.6.1 AC-to-ASC mapping

Information Element/Group name	Need	Multi	Type and reference	Semantics description
AC-to-ASC mapping table	MP	maxASCmap		
>AC-to-ASC mapping	MP		Integer(0..7)	Mapping of Access Classes to Access Service Classes (see subclause 8.5.13.)

## 10.3.6.2 AICH Info

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Channelisation code	MP		Integer(0..255)	SF is fixed and equal to 256
STTD indicator	MP		STTD Indicator 10.3.6.78	
AICH transmission timing	MP		Enumerated(0, 1)	See parameter AICH_Transmission_Timing in [26]

### 10.3.6.3 AICH Power offset

NOTE: Only for FDD.

This parameter is used to indicate the power level of AICH, AP-AICH and CD/CA-ICH channels. This is the power per transmitted Acquisition Indicator, AP Acquisition Indicator or CD/CA Indicator minus power of the Primary CPICH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
AICH Power offset	MP		Integer(-22..+5)	Offset in dB

### 10.3.6.4 Allocation period info

NOTE: Only for TDD.

Parameters used by UE to determine period of shared channel allocation.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Allocation Activation Time	MP		Integer(0..255)	Start the allocation period at the given CFN.
Allocation Duration	MP		Integer(1..256)	Total number of frames for the allocation period.

### 10.3.6.5 Alpha

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Alpha Value	MP		Enumerated(0, 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 1)	

## 10.3.6.6 ASC setting

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>mode</i>	MP				
>FDD					
>>Available signature Start Index	MP		Integer(0..15)		
>>Available signature End Index	MP		Integer(0..15)		
>>Assigned Sub-Channel Number	MP		Bitstring(4)	This IE defines the subchannel assignment as specified in 8.6.6.29. The bits are numbered b0 to b3, where b0 is the least significant bit.	
>TDD					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>Available Channelisation codes indices	MD		Bitstring(8)	Each bit indicates availability of a channelisation code index, where the channelisation code indices are numbered "channelisation code index 0" to "channelisation code index 7". The value 1 of a bit indicates that the channelisation code index is available for the ASC this IE is associated to. The value 0 of a bit indicates that the channelisation code index is not available for the ASC this IE is associated to. Default is that all channelisation codes defined in PRACH Info are available.	
>>>>1.28 Mcps TDD					REL-4
>>>>>Available SYNC_UL codes indices	MD		Bitstring(8)	Each bit indicates availability of a SYNC_UL code index, where the SYNC_UL code indices are numbered "SYNC_UL code index 0" to "SYNC_UL code index 7". The value 1 of a bit indicates that the SYNC_UL code index is available for the ASC this IE is	REL-4



				associated to. The value 0 of a bit indicates that the SYNC_UL code index is not available for the ASC this IE is associated to. Default is that all SYNC_UL codes defined in SYNC_UL Info are available.	
>>CHOICE <i>subchannel size</i>	MP				
>>>Size1					
>>>>Available Subchannels	MP		null	Indicates that all Subchannels are available	
>>>Size2					
>>>>Available Subchannels	MD		Bitstring (2)	NOTE 1	
>>>Size4					
>>>>Available Subchannels	MD		Bitstring (4)	NOTE 1	
>>>Size8					
>>>>Available Subchannels	MD		Bitstring (8)	NOTE 1	

NOTE 1: Each bit indicates availability of a subchannel, where the subchannels are numbered subchannel 0, subchannel 1 etc. The value 1 of a bit indicates that the subchannel is available for the ASC this IE is associated with. The value 0 of a bit indicates that the subchannel is not available for the ASC this IE is associated with. Default value of the IE is that all subchannels within the size are available for the ASC this IE is associated with.

### 10.3.6.7 Block STTD indicator

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Block STTD indicator	MP		Boolean	TRUE indicates that block STTD is used

### 10.3.6.8 CCTrCH power control info

Parameters used by UE to set the SIR target value for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
TFCS Identity	OP		Transport Format Combination Set Identity 10.3.5.21	TFCS Identity of this CCTrCH. Default value is 1.
Uplink DPCH power control info	MP		Uplink DPCH power control info 10.3.6.91	

#### 10.3.6.8a Cell and Channel Identity info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Burst type	MP		Enumerated (Type1, Type2)	Identifies the channel in combination with the Midamble shift and slot number
Midamble Shift	MP		Integer (0...15)	
Time Slot	OP		Timeslot number 10.3.6.84	This IE is present only if no IPDL scheme is configured in the reference cell. Otherwise the slot is defined by the IPDL configuration.
Cell parameters ID	MP		Cell parameters ID 10.3.6.9	Identifies the cell

### 10.3.6.9 Cell parameters Id

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Cell parameter Id	MP		Integer(0..127)	

### 10.3.6.10 Common timeslot info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
2 <sup>nd</sup> interleaving mode	MD		Enumerated (Frame, Timeslot)	Frame timeslot related interleaving. Default value is "Frame"
TFCI coding	MD		Integer(4,8,16,32)	Describes the amount of bits for the TFCI bits code word as described in [31]. Defaults is no TFCI bit: In case of 8 PSK in 1.28Mcps TDD: 4 corresponds to 6 TFCI code word bits. 8 corresponds to 12 TFCI code word bits. 16 corresponds to 24 TFCI code word bits. 32 corresponds to 48 TFCI code word bits.
Puncturing limit	MP		Real(0.40..1.0 by step of 0.04)	
Repetition period	MD		Integer(1, 2,4,8,16,32,64)	Default is continuous allocation. Value 1 indicate continuous
Repetition length	MP		Integer(1..Repetition period -1 )	Note that this is empty if repetition period is set to 1

### 10.3.6.11 Constant value

This constant value is used by the UE to calculate the initial output power on PRACH according to the Open loop power control procedure. In TDD constant values are used for open loop power control of PRACH, USCH and UL DPCH as defined in subclause 8.5.7.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Constant value	MP		Integer (-35..-10)	

### 10.3.6.12 CPCH persistence levels

NOTE: Only for FDD.

This IE is dynamic and is used by RNC for load balancing and congestion control. This is broadcast often in the system information message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH set ID	MP		Integer (1 .. <maxCPCHs ets>)	Identifier for CPCH set info.
Dynamic persistence level	MP	1 to <maxTF-CPCH>		
>Dynamic persistence level	MP		Dynamic persistence level 10.3.6.35	Persistence level for transport format.

### 10.3.6.13 CPCH set info

NOTE: Only for FDD.

This IE may be broadcast in the System Information message or assigned by SRNC. It is pseudo-static in a cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH set ID	MP		CPCH set ID 10.3.5.3	Indicates the ID number for a particular CPCH set allocated to a cell.
TFS	MP		Transport Format Set 10.3.5.23	Transport Format Set Information allocated to this CPCH set.
TFCS	MP		Transport Format Combination Set 10.3.5.20	Transport Format Set Information allocated to this CPCH set
AP preamble scrambling code	MP		Integer (0..79)	Preamble scrambling code for AP in UL
AP-AICH channelisation code	MP		Integer(0..255)	Channelisation code for AP-AICH in DL
CD preamble scrambling code	MP		Integer (0..79)	Preamble scrambling code for CD in UL
CD/CA-ICH channelisation code	MP		Integer (0..255)	Channelisation code for CD/CA-ICH in DL
Available CD access slot subchannel	CV- CDSigPresent	1 to <maxPCP CH-CDsubCh>		Lists the set of subchannels to be used for CD access preambles. Note: if not present, all subchannels are to be used without access delays.
>CD access slot subchannel	MP		Integer (0..11)	
Available CD signatures	OP	1 to <maxPCP CH-CDsig>		Signatures for CD preamble in UL. Note: if not present, all signatures are available for use.
>CD signatures	MP		Integer (0..15)	
DeltaPp-m	MP		Integer (-10..10)	In dB. Power offset between the transmitted CD preamble and UL DPCCH of the power control preamble or message part (added to the preamble power to calculate the power of the UL DPCCH)
UL DPCCH Slot Format	MP		Enumerated (0,1,2)	Slot format for UL DPCCH in power control preamble and in message part
N_start_message	MP		Integer (1..8)	Number of Frames for start of message indication
N_EOT	MP		Integer(0..7)	Actual number of appended EOT indicators is $T\_EOT = N\_TTI * \text{ceil}(N\_EOT/N\_TTI)$ , where $N\_TTI$ is the number of frames per TTI and "ceil" refers to rounding up to nearest integer.
Channel Assignment Active	OP		Boolean	When present, indicates that Node B send a CA message and VCAM mapping rule (14.11) shall be used.
CPCH status indication mode	MP		CPCH status indication mode 10.3.6.14	
PCPCH Channel Info.	MP	1 to <maxPCP CHs>		
>UL scrambling code	MP		Integer (0..79)	For PCPCH message part

>DL channelisation code	MP		Integer (0..511)	For DL DPCCH for PCPCH message part
>DL scrambling code	MD		Secondary Scrambling Code 10.3.6.74	Default is the same scrambling code as for the primary CPICH.
>PCP length	MP		Enumerated (0, 8)	Indicates length of power control preamble, 0slots (no preamble used) or 8 slots
>UCSM Info	CV-NCAA			
>>Minimum Spreading Factor	MP		Integer (4,8,16,32,64,128,256 )	The UE may use this PCPCH at any Spreading Factor equal to or greater than the indicated minimum Spreading Factor. The Spreading Factor for initial access is the minimum Spreading Factor.
>>NF_max	MP		Integer (1..64)	Maximum number of frames for PCPCH message part
>>>Channel request parameters for UCSM	MP			Required in UE channel selection mode.
>>>>Available AP signature	MP	1 to <maxPCP CH-APsig>		AP preamble signature codes for selection of this PCPCH channel.
>>>>>AP signature	MP		Integer (0..15)	
>>>>>Available AP access slot subchannel	OP	1 to <maxPCP CH-APsubCh>		Lists the set of subchannels to be used for AP access preambles in combination with the above AP signature(s). Note: if not present, all subchannels are to be used without access delays.
>>>>>>AP access slot subchannel	MP		Integer (0..11)	
VCAM info	CV-CAA			
>Available Minimum Spreading Factor	MP	1 to <maxPCP CH-SF>		
>>Minimum Spreading Factor	MP		Enumerated (4,8,16,32,64,128,256 )	
>>NF_max	MP		Integer (1..64)	Maximum number of frames for PCPCH message part
>>>Maximum available number of PCPCH	MP		Integer (1..64)	Maximum available number of PCPCH for the indicated Spreading Factor.
>>>>Available AP signatures	MP	1 to <maxPCP CH-APsig>		Signatures for AP preamble in UL.
>>>>>AP signature			Integer (0..15)	
>>>>>>Available AP sub-channel	OP	1 to <maxPCP CH-APsubCh>		AP sub-channels for the given AP signature in UL. Note: if not present, all subchannels are to be used without access delays.
>>>>>>>AP sub-channel	MP		Integer (0..11)	

Condition	Explanation
<i>CDSigPresent</i>	This IE is <u>optional</u> <del>may be included</del> if IE "Available CD signatures" is present <u>and not needed otherwise</u> .
<i>NCAA</i>	This IE is <u>mandatory present</u> <del>included</del> if IE "Channel Assignment Active" is not present <u>and not needed otherwise</u> .
<i>CAA</i>	This IE is <u>mandatory present</u> <del>included</del> if IE ""Channel Assignment Active" is present <u>and not needed otherwise</u> .

### 10.3.6.14 CPCH Status Indication mode

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CPCH Status Indication mode	MP		Enumerated (PA mode, PAMASF mode)	Defines the status information type broadcast on the CPCH Status Indication Channel (CSICH)

CPCH Status Indication mode defines the structure of the CSICH information that is broadcast by Node B on the CSICH channel. CSICH mode can take 2 values: PCPCH Availability (PA) mode and PCPCH Availability with Minimum Available Spreading Factor (PAMASF) mode. PAMASF mode is used when Channel Assignment is active. PA mode is used when Channel Assignment is not active (UE Channel Selection is active). [26] defines the structure of the CSICH information for both CSICH modes.

### 10.3.6.15 CSICH Power offset

NOTE: Only for FDD.

This is the power per transmitted CSICH Indicator minus power of the Primary CPICH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CSICH Power offset	MP		Integer(-10..+5)	Offset in dB, granularity of 1 dB

### 10.3.6.16 Default DPCH Offset Value

Indicates the default offset value within interleaving size at a resolution of 512chip (1/5 slot) in FDD and a resolution of one frame in TDD to offset CFN in the UE. This is used to distribute discontinuous transmission periods in time and also to distribute NodeB-RNC transmission traffics in time. Even though the CFN is offset by DOFF, the start timing of the interleaving will be the timing that "CFN mod (interleaving size)"=0 (e.g. interleaving size: 2,4,8) in both UE and SRNC.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>				
>FDD				
>>Default DPCH Offset Value (DOFF)	MP		Integer (0..306688 by step of 512)	Number of chips=. 0 to 599 time 512 chips, see [10].
>TDD				
>>Default DPCH Offset Value (DOFF)	MP		Integer(0..7)	Number of frames; See [10]

10.3.6.17 Downlink channelisation codes

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>codes representation</i>	MP			
>Consecutive codes				
>>First channelisation code	MP		Enumerated ( (16/1)...(16/16) )	The codes from First channelisation code to Last channelisation code shall be used in that order by the physical layer in this timeslot. If a TFCI exists in this timeslot, it is mapped in the First channelisation code.
>>Last channelisation code	MP		Enumerated ( (16/1)...(16/16) )	If this is the same as First channelisation code, only one code is used by the physical layer.
>Bitmap				
>>Channelisation codes bitmap	MP		Bitstring(16)	<b>Each bit indicates the availability of a channelisation code for SF16, where the channelisation codes are numbered as channelisation code 1 (SF16) to channelisation code 16 (SF16).</b> (For SF 16, a 1 in the bitmap means that the corresponding code is used, a 0 means that the corresponding code is not used.) If all bits are set to zero, SF 1 shall be used.

10.3.6.18 Downlink DPCH info common for all RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timing Indication	MP		Enumerated(Initialise, Maintain)	Note 1
CFN-targetSFN frame offset	CV- <i>TimInd</i>		Integer(0..255)	In frame
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	
<b>CHOICE mode</b>	MP			
>FDD				
>>Power offset $P_{Pilot-DPDCH}$	MP		Integer(0..24)	Power offset equals $P_{Pilot} - P_{DPDCH}$ , range 0..6 dB, in steps of 0.25 dB
>>>Downlink rate matching restriction information	OP		Downlink rate matching restriction information 10.3.6.31	If this IE is set to "absent", no Transport CH is restricted in TFI.
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	
>>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>>CHOICE SF	MP			
>>>>SF = 256				
>>>>>Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>>>>SF = 128				
>>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>>>>Otherwise				(no data). In ASN.1 choice "Otherwise" is not explicitly available as all values are available, it is implied by the use of any value other than 128 or 256.
>TDD				
>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info

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

Condition	Explanation
<i>TimInd</i>	This IE is optional OPTIONAL if the IE "Timing Indication" is set to "Initialise". Otherwise it is <u>not needed</u> absent.

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



10.3.6.19 Downlink DPCH info common for all RL Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	

10.3.6.20 Downlink DPCH info common for all RL Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-Andpilot with "number of its for pilot bits" in ASN.1
>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>CHOICE <i>SF</i>	MP			
>>>SF = 256				
>>>>Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>>SF = 128				
>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>>Otherwise				(no data)
>TDD				
>>Common timeslot info	MP		Common Timeslot Info 10.3.6.10	

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

## 10.3.6.21 Downlink DPCH info for each RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>>DPCH frame offset	MP		Integer(0..381 44 by step of 256)	Offset (in number of chips) between the beginning of the P-CCPCH frame and the beginning of the DPCH frame This is called $\tau_{DPCH,n}$ in [26]
>>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73	
>>>DL channelisation code	MP	1 to <maxDPC H-DLchan>		For the purpose of physical channel mapping [27] the DPCHs are numbered, starting from DPCH number 1, according to the order that they are contained in this IE.
>>>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumber with "code number" in ASN.1
>>>>Code number	MP		Integer(0..Spreading factor - 1)	
>>>>Scrambling code change	CH-SF/2		Enumerated (code change, no code change)	Indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'.
>>>TPC combination index	MP		TPC combination index 10.3.6.85	
>>>SSDT Cell Identity	OP		SSDT Cell Identity 10.3.6.76	
>>>Closed loop timing adjustment mode	CH- <i>TxDiversity Mode</i>		Integer(1, 2)	It is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Value in slots
>TDD				
>>>DL CCTrCh List	MP	1..<maxCC TrCH>		
>>>>TFCS ID	MD		Integer(1..8)	Identity of this CCTrCh. Default value is 1
>>>>Time info	MP		Time Info 10.3.6.83	
>>>>Downlink DPCH timeslots and codes	MD		Downlink Timeslots and Codes 10.3.6.32	Default is to use the old timeslots and codes.
>>>>UL CCTrCH TPC List	MD	0..<maxCC TrCH>		UL CCTrCH identities for TPC commands associated with this DL CCTrCH. Default is previous list or all defined UL CCTrCHs

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>>UL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21	

Condition	Explanation
<i>SF/2</i>	The information element is mandatory <u>present</u> if the UE has an active compressed mode pattern sequence, which is using compressed mode method "SF/2". Otherwise the IE is not needed.
<i>TxDiversity Mode</i>	This IE is <u>mandatory</u> present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Otherwise the IE is not needed.

### 10.3.6.22 Downlink DPCH info for each RL Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>CHOICE <i>Spreading factor</i>	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumber with "code number" in ASN.1
>>Code number	MP		Integer(0.. Spreading factor - 1)	
>>Scrambling code change	CH-SF/2		Enumerated (code change, no code change)	Indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'.
>>>TPC combination index	MP		TPC combination index 10.3.6.85	
>TDD				
>>Downlink DPCH timeslots and codes	MP		Downlink Timeslots and Codes 10.3.6.32	

## 10.3.6.23 Downlink DPCH power control information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>DPC Mode	MP		Enumerated (Single TPC, TPC triplet in soft)	"Single TPC" is DPC_Mode=0 and "TPC triplet in soft" is DPC_mode=1 in [29].
>TDD				
>>TPC Step Size	OP		Integer (1, 2, 3)	In dB

## 10.3.6.24 Downlink information common for all radio links

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Downlink DPCH info common for all RL	OP		Downlink DPCH info common for all RL 10.3.6.18		
CHOICE <i>mode</i>	MP				
>FDD					
>>DPCH compressed mode info	MD		DPCH compressed mode info 10.3.6.33	Default value is the existing value of DPCH compressed mode information	
>>TX Diversity Mode	MD		TX Diversity Mode 10.3.6.86	Default value is the existing value of TX Diversity mode	
>>>SSDT information	OP		SSDT information 10.3.6.77		
>TDD				(no data)	
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD				(no data)	REL-4
>>>1.28 Mcps TDD					REL-4
>>>>TSTD indicator	MP		TSTD indicator 10.3.6.85a		REL-4
Default DPCH Offset Value	OP		Default DPCH Offset Value, 10.3.6.16		

## 10.3.6.25 Downlink information common for all radio links Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Post 10.3.6.19	

## 10.3.6.26 Downlink information common for all radio links Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Pre 10.3.6.20	

## 10.3.6.27 Downlink information for each radio link

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>PDSCH with SHO DCH Info	OP		PDSCH with SHO DCH Info 10.3.6.47	
>>PDSCH code mapping	OP		PDSCH code mapping 10.3.6.43	
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57	
Downlink DPCH info for each RL	OP		Downlink DPCH info for each RL 10.3.6.21	
SCCPCH Information for FACH	OP		SCCPCH Information for FACH 10.3.6.70	

## 10.3.6.28 Downlink information for each radio link Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info post 10.3.6.58	
Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL Post 10.3.6.22	

## 10.3.6.29 Void

## 10.3.6.30 Downlink PDSCH information

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PDSCH with SHO DCH Info	OP		PDSCH with SHO DCH Info 10.3.6.47	
PDSCH code mapping	OP		PDSCH code mapping 10.3.6.43	

## 10.3.6.31 Downlink rate matching restriction information

This IE indicates which TrCH is restricted in TFI.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Restricted TrCH information	OP	1 to <maxTrCH>		
>Downlink transport channel type	MP		Enumerated(DCH,DSCH)	
>Restricted DL TrCH identity	MP		Transport channel identity 10.3.5.18	
>Allowed TFIs	MP	1 to <maxTF>		
>>Allowed TFI	MP		Integer(0..31)	

## 10.3.6.32 Downlink Timeslots and Codes

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
First Individual timeslot info	MP		Individual timeslot info 10.3.6.37	Individual timeslot info for the first timeslot used by the physical layer.
First timeslot channelisation codes	MP		Downlink channelisation codes 10.3.6.17	These codes shall be used by the physical layer in the timeslot given in First Individual timeslot info.
CHOICE <i>more timeslots</i>	MP			
>No more timeslots				(no data)
>Consecutive timeslots				
>>Number of additional timeslots	MP		Integer(1..maxTS-1)	The timeslots used by the physical layer shall be timeslots: N mod maxTS (N+1) mod maxTS ... (N+k) mod maxTS in that order, where N is the timeslot number in the First individual timeslot info and k the Number of additional timeslots. The additional timeslots shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) as the first timeslot.
>Timeslot list				
>>Additional timeslot list	MP	1 to <maxTS-1>		The first instance of this parameter corresponds to the timeslot that shall be used second by the physical layer, the second to the timeslot that shall be used third and so on.
>>>CHOICE <i>parameters</i>	MP			
>>>>Same as last				
>>>>>Timeslot number	MP		Timeslot Number 10.3.6.84	The physical layer shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) for this timeslot as for the last one.
>>>>>New parameters				
>>>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.37	
>>>>>Channelisation codes	MP		Downlink channelisation codes 10.3.6.17	

### 10.3.6.33 DPCH compressed mode info

NOTE: Only for FDD.

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence	MP	1 to <maxTGP S>		
>TGPSI	MP		TGPSI	

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



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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				the transmission gap pattern (without including the effect of the bit-rate increase)
>>DeltaSIRafter1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the first transmission gap in the transmission gap pattern.
>>DeltaSIR2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the second transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase) When omitted, DeltaSIR2 = DeltaSIR1.
>>DeltaSIRafter2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the second transmission gap in the transmission gap pattern. When omitted, DeltaSIRafter2 = DeltaSIRafter1.
>>N Identify abort	CV-Initial BSIC		Integer(1..128)	Indicates the maximum number of repeats of patterns that the UE shall use to attempt to decode the unknown BSIC of the GSM cell in the initial BSIC identification procedure
>>T Reconfirm abort	CV-Re-confirm BSIC		Real(0.5..10.0 by step of 0.5)	Indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure. The time is given in steps of 0.5 seconds.

Condition	Explanation
Active	This information element is <u>mandatory present only sent</u> when the value of the "TGPS Status Flag" IE is "Active" <u>and not needed otherwise</u> .
Initial BSIC	This information element is <u>mandatory present only sent</u> when the value of the IE "TGMP" is set to "GSM Initial BSIC identification" <u>and not needed otherwise</u> .
Re-confirm BSIC	This information element is <u>mandatory present only sent</u> when the value of the IE "TGMP" is set to "GSM BSIC re-confirmation" <u>and not needed otherwise</u> .

### 10.3.6.34 DPCH Compressed Mode Status Info

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPS reconfiguration CFN	MP		Integer (0..255)	Connection Frame Number of the frame where already active Transmission Gap Pattern Sequences shall be deactivated

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

Condition	Explanation
Active	This information element is <u>mandatory present only sent</u> when the value of the "TGPS Status Flag" IE is "Active" and not needed otherwise.

10.3.6.35 Dynamic persistence level

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Dynamic persistence level	MP		Integer(1..8)	Level shall be mapped to a dynamic persistence value in the range 0 .. 1.

10.3.6.35a FPACH info

NOTE: Only for 1.28 Mcps TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Timeslot number	MP		Integer(1..6)		REL-4
Channelisation code	MP		Enumerated( (16/1)..(16/1 6)		REL-4
Midamble Shift and burst type	MP		Midamble shift and burst type 10.3.6.41		REL-4
WT	MP		Integer(1..4)	The number of sub-frames, following the sub-frame in which the SYNC UL is transmitted, in which the FPACH can be transmitted.	REL-4

## 10.3.6.36 Frequency info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>UARFCN uplink (Nu)	OP		Integer(0..16383)	[21] If IE not present, default duplex distance of 190 MHz shall be used.
>>UARFCN downlink (Nd)	MP		Integer(0 .. 16383)	[21]
>TDD				
>>UARFCN (Nt)	MP		Integer(0 .. 16383)	[22]

## 10.3.6.37 Individual timeslot info

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Timeslot number	MP		Timeslot number 10.3.6.84	Timeslot within a frame	
TFCI existence	MP		Boolean	TRUE indicates that the TFCI exists. It shall be coded in the first physical channel of this timeslot.	
Midamble Shift and burst type	MP		Midamble shift and burst type 10.3.6.41		
CHOICE <i>TDD option</i>	MP				REL-4
>3.84 Mcps TDD				(no data)	REL-4
>1.28 Mcps TDD					REL-4
>>Modulation	MP		Enumerated(QPSK, 8PSK)		REL-4
>>SS-TPC Symbols	MP		Enumerated(0, 1, 16/SF)	Denotes amount of SS and TPC bits send in this timeslot	REL-4

## 10.3.6.38 Individual Timeslot interference

Parameters used by the UE for uplink open loop power control in TDD.

Information element	Need	Multi	Type and reference	Semantics description
Timeslot number	MP		Timeslot number 10.3.6.84	
UL Timeslot Interference	MP		UL Interference 10.3.6.87	

## 10.3.6.39 Maximum allowed UL TX power

This information element indicates the maximum allowed uplink transmit power.

Information Element	Need	Multi	Type and reference	Semantics description
Maximum allowed UL TX power	MP		Integer(-50..33)	In dBm

#### 10.3.6.40 Void

#### 10.3.6.41 Midamble shift and burst type

NOTE: Only for TDD.

This information element indicates burst type and midamble allocation. Three different midamble allocation schemes exist:

- Default midamble: the midamble shift is selected by layer 1 depending on the associated channelisation code (DL and UL)
- Common midamble: the midamble shift is chosen by layer 1 depending on the number of channelisation codes (possible in DL only)
- UE specific midamble: a UE specific midamble is explicitly assigned (DL and UL).

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>TDD option</i>	MP				REL-4
>3.84 Mcps TDD					REL-4
>>CHOICE <i>Burst Type</i>	MP				
>>>Type 1					
>>>>Midamble Allocation Mode	MP		Enumerated (Default midamble, Common midamble, UE specific midamble)		
>>>>Midamble configuration burst type 1 and 3	MP		Integer(4, 8, 16)	As defined in [30]	
>>>>Midamble Shift	CV-UE		Integer(0..15)		
>>>Type 2					
>>>>Midamble Allocation Mode	MP		Enumerated (Default midamble, Common midamble, UE specific midamble)		
>>>>Midamble configuration burst type 2	MP		Integer(3, 6)	As defined in [30]	
>>>>Midamble Shift	CV-UE		Integer(0..5)		
>>>Type 3					
>>>>Midamble Allocation Mode	MP		Enumerated (Default midamble, UE specific midamble)		
>>>>Midamble configuration burst type 1 and 3	MP		Integer(4, 8, 16)	As defined in [30]	
>>>>Midamble Shift	CV-UE		Integer (0..15)	NOTE: Burst Type 3 is only used in uplink.	
>1.28 Mcps TDD					REL-4
>>Midamble Allocation Mode	MP		Enumerated (Default midamble, UE specific midamble)		REL-4
>>Midamble configuration	MP		Integer(2, 4, 6, 8, 10, 12, 14, 16)	As defined in [30]	REL-4
>>Midamble Shift	CV-UE		Integer (0..15)		REL-4

Condition	Explanation
UE	This information element is <u>mandatory present only</u> sent when the value of the "Midamble Allocation Mode" IE is "UE-specific midamble" <u>and not needed otherwise.</u>

10.3.6.42 PDSCH Capacity Allocation info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PDSCH allocation period info	MP		Allocation Period Info 10.3.6.4	
TFCS ID	MD		Integer(1..8)	Default is 1.
CHOICE <i>Configuration</i>	MP			
>Old configuration				
>>PDSCH Identity	MP		Integer(1..Hi PDSCHIdentities)	
>New configuration				
>>PDSCH Info	MP		PDSCH Info 10.3.6.44	
>>PDSCH Identity	OP		Integer(1..Hi PDSCHIdentities)	
>>PDSCH power control info	OP		PDSCH power control info 10.3.6.45	

### 10.3.6.43 PDSCH code mapping

NOTE: Only for FDD.

This IE indicates the association between each possible value of TFCI(field 2) and the corresponding PDSCH channelisation code(s). The following signalling methods are specified:

- 'code range': the mapping is described in terms of a number of groups, each group associated with a given spreading factor;
- 'TFCI range': the mapping is described in terms of a number of groups, each group corresponding to a given PDSCH channelisation code;
- 'Explicit': the mapping between TFCI(field 2) value and PDSCH channelisation code is spelt out explicitly for each value of TFCI (field2);
- 'Removal': replace individual entries in the TFCI(field 2) to PDSCH code mapping table with new PDSCH code values.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Scrambling Code	MD		Secondary scrambling code 10.3.6.74	Scrambling code on which PDSCH is transmitted. Default is the same scrambling code as for the Primary CPICH
Choice <i>signalling method</i>	MP			
>code range				
>>PDSCH code mapping	MP	1 to < maxPDSC H-TFCIgroups >		
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>multi-code info	MP		Integer(1..16)	
>>>Code number (for PDSCH code) start	MP		Integer(0..Spreading factor-1)	
>>>Code number (for PDSCH code) stop	MP		Integer(0..Spreading factor-1)	
>TFCI range				
>>DSCH mapping	MP	1 to < maxPDSC H-TFCIgroups >		
>>>Max TFCI(field2) value	MP		Integer(1..1023)	This is the maximum value in the range of TFCI(field 2) values for which the specified PDSCH code applies
>>>Spreading factor (for PDSCH code)	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>Code number (for PDSCH code)	MP		Integer(0..Spreading factor-1)	
>>>multi-code info	MP		Integer(1..16)	
>Explicit				
>>PDSCH code info	MP	1 to < maxTFCI-2-Combs >		The first instance of the parameter <i>PDSCH code</i> corresponds to TFCI (field2) = 0, the second to TFCI(field 2) = 1 and so on.
>>>Spreading factor (for PDSCH code)	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>Code number (for PDSCH code)	MP		Integer(0..Spreading factor-1)	
>>>multi-code info	MP		Integer(1..16)	
>Replace				This choice is made if the PDSCH code(s) associated with a given value of TFCI(field 2) is to be replaced.
>>Replaced PDSCH code	MP	1 to < maxTFCI-2-Combs >		Identity of the PDSCH code(s) to be used for the specified value of TFCI(field 2). These code identity(s) replace any that had been specified before
>>>TFCI (field 2)	MP		Integer	Value of TFCI(field 2) for



Information Element/Group name	Need	Multi	Type and reference	Semantics description
			(0..1023)	which PDSCH code mapping will be changed
>>>Spreading factor (for PDSCH code)	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>>Code number (for PDSCH code)	MP		Integer(0..Spreading factor-1)	
>>>multi-code info	MP		Integer(1..16)	

#### 10.3.6.44 PDSCH info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Integer(1..8)	TFCS to be used. Default value is 1.
Common timeslot info	OP		Common timeslot info 10.3.6.10	
PDSCH timeslots and codes	OP		Downlink Timeslots and Codes 10.3.6.32	Default is to use the old timeslots and codes.

#### 10.3.6.45 PDSCH Power Control info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TPC Step Size	OP		Integer (1, 2, 3)	In dB
UL CCTrCH TPC List	OP	1..<maxCC TrCH>		UL CCTrCH identities for TPC commands associated with this DL CCTrCH
>UL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21	

#### 10.3.6.46 PDSCH system information

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PDSCH information	MP	1 to <maxPDSCH>		
>PDSCH Identity	MP		Integer(1..Hi PDSCHIdentities)	
>PDSCH info	MP		PDSCH info 10.3.6.44	
>SFN Time Info	CH-Block17		SFN Time Info 10.3.6.75	
>DSCH TFS	OP		Transport format set 10.3.5.23	
>DSCH TFCS	OP		Transport Format Combination Set 10.3.5.20	

Condition	Explanation
Block17	This IE is <u>not needed</u> absent-in System Information Block 17. Otherwise it is optional.

### 10.3.6.47 PDSCH with SHO DCH Info

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DSCH radio link identifier	MP		Primary CPICH info 10.3.6.60	This parameter indicates on which radio link the user will be allocated resource on the DSCH.
TFCI(field2) Combining set	OP	1 to <maxRL>		This is used to indicate which of the downlink TFCI(field 2) transmissions made on the DPCCs within the active set should be soft combined on the physical layer. This parameter may only be sent if there is a 'hard' split of the TFCI field and in this case the sending of the parameter is optional.
>Radio link identifier	MP		Primary CPICH info 10.3.6.60	

### 10.3.6.48 Persistence scaling factors

This IE defines scaling factors associated with ASC 2 – ASC 7 to be applied to the dynamic persistence value.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Access Service Class	MP	1 to maxASCpersist		multiplicity corresponds to the number of PRACH partitions minus 2
>Persistence scaling factor	MP		Real(0.9..0.2, by step of 0.1)	Scaling factors in the range 0,...,1

## 10.3.6.49 PICH Info

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>mode</i>	MP				
>FDD					
>>Channelisation code	MP		Integer(0..255)	SF is fixed and equal to 256	
>>Number of PI per frame	MP		Integer (18, 36, 72, 144)		
>>STTD indicator	MP		STTD Indicator 10.3.6.78		
>TDD					
>>Timeslot number	MD		Timeslot number 10.3.6.84	Default value is the timeslot used by the SCCPCH carrying the associated PCH.	
>>>>CHOICE <i>TDD option</i>	MP				REL-4
>>>>>3.84 Mcps TDD					REL-4
>>>>>>Channelisation code	MD		Enumerated ( (16/1)...(16/16) )	Default value is the channelisation code used by the SCCPCH carrying the associated PCH.	
>>>>>CHOICE <i>Burst Type</i>	MP				
>>>>>>Type 1					
>>>>>>>Midamble Shift	MP		Integer(0..15)		
>>>>>>>Type 2					
>>>>>>>>Midamble Shift	MP		Integer(0..5)		
>>>>1.28 Mcps TDD					REL-4
>>>>>Midamble shift and burst type	MP		Midamble shift and burst type 10.3.6.41		REL-4
>>Repetition period/length	MD		Enumerated( (4/2),(8/2), (8/4),(16/2), (16/4), (32/2),(32/4), (64/2),(64/4) )	Default value is "(64/2)".	
>>Offset	MP		Integer (0...Repetition period -1)	SFN mod Repetitionperiod = Offset.	
>>Paging indicator length	MD		Integer (4, 8, 16)	Indicates the length of one paging indicator in Bits. Default value is 4.	
>>N <sub>GAP</sub>	MD		Integer(2, 4, 8)	Number of frames between the last frame carrying PICH for this Paging Occasion and the first frame carrying paging messages for this Paging Occasion. Default value is 4.	
>>N <sub>PCH</sub>	MD		Integer(1 .. 8)	Number of paging groups. Default value is 2.	

## 10.3.6.50 PICH Power offset

This is the power transmitted on the PICH minus power of the Primary CPICH in FDD and Primary CCPCH Tx Power in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PICH Power offset	MP		Integer(-10 .. +5)	Offset in dB

## 10.3.6.51 PRACH Channelisation Code List

NOTE: Only for 3.84Mcps TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE SF	MP				
>SF16					
>>Channelisation Code List	MP	1 to 8			
>>>Channelisation code	MP		Enumerated ((16/1)..(16/16))	1:1 mapping between spreading code and midamble shift	
>SF8					
>>Channelisation Code List	MP	1 to 8			
>>>Channelisation Code	MP		Enumerated( (8/1)..(8/8))		

## 10.3.6.51a PRACH Channelisation Code 1.28Mcps TDD

NOTE: Only for 1.28Mcps TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Channelisation Code List	MP	1 to 4			REL-4
>Channelisation Code	MP		Enumerated( (4/1)..(4/4),(8/1)..(8/8),(16/1)..(16/16))		REL-4

## 10.3.6.52 PRACH info (for RACH)

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>mode</i>	MP				
>FDD					
>>Available Signature	MP		Bitstring(16)	Each bit indicates availability for a signature, where the signatures are numbered "signature 0" up to "signature 15". The value 1 of a bit indicates that the corresponding signature is available and the value 0 that it is not available.	
>>Available SF	MP		Integer (32,64,128,256)	In chips per symbol Defines the minimum allowed SF (i.e. the maximum rate)	
>>Preamble scrambling code number	MP		Integer (0 .. 15)	Identification of scrambling code see [28]	
>>Puncturing Limit	MP		Real(0.40..1.00 by step of 0.04)		
>>Available Sub Channel Number	MP		Bitstring(12)	Each bit indicates availability for a subchannel, where the subchannels are numbered "subchannel 0" to "subchannel 11". The value 1 of a bit indicates that the corresponding subchannel is available and the value 0 indicates that it is not available.	
>TDD					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>Timeslot number	MP		Timeslot number 10.3.6.84		
>>>>PRACH Channelisation Code List	MP		PRACH Channelisation Code List 10.3.6.51		
>>>>PRACH Midamble	MP		Enumerated (Direct, Direct/Inverted)	Direct or direct and inverted midamble are used for PRACH	
>>>1.28 Mcps TDD					REL-4
>>>>SYNC_UL info	MP		SYNC_UL info 10.3.6.78a		REL-4
>>>>PRACH Definition	MP	1..<maxPR			REL-4

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
		ACH_FPA CH>			
>>>>>Timeslot number	MP		Timeslot number 10.3.6.84		REL-4
>>>>>PRACH Channelisation Code	MP		PRACH Channelisation Code 1.28Mcps TDD 10.3.6.51a		REL-4
>>>>>Midamble Shift and burst type	MP		Midamble shift and burst type 10.3.6.41		REL-4
>>>>>FPACH info	MP		FPACH info 10.3.6.35a		REL-4
>>PNBSCH allocation	OP		PNBSCH allocation 10.3.8.10a	Identifies frames used for cell synchronisation purposes	REL-4

### 10.3.6.53 PRACH partitioning

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Access Service class	MP	1 to maxASC		
ASC Setting	MD		ASC setting 10.3.6.6	The default values are same as the previous ASC. If the "default" is used for the first ASC, the default values are all available signatures and "all available sub-channels" for FDD and "all available channelisation codes" and "all available subchannels" with "subchannel size=Size 1" in TDD.

### 10.3.6.54 PRACH power offset

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Power Ramp Step	MP		Integer (1..8)	Power step when no acquisition indicator is received in dB
Preamble Retrans Max	MP		Integer (1..64)	Maximum number of preambles in one preamble ramping cycle

## 10.3.6.55 PRACH system information list

Information element	Need	Multi	Type and reference	Semantics description
PRACH system information	MP	1 .. <maxPRA CH>		
>PRACH info	MP		PRACH info (for RACH) 10.3.6.52	
>Transport channel identity	MP		Transport channel identity 10.3.5.18	
>RACH TFS	MD		Transport format set 10.3.5.23	Default value is the value of "RACH TFS" for the previous PRACH in the list NOTE: The first occurrence is then MP) NOTE: For TDD in this release there is a single TF within the RACH TFS.
>RACH TFCS	MD		Transport Format Combination Set 10.3.5.20	Default value is the value of "RACH TFCS" for the previous PRACH in the list. NOTE: The first occurrence is then MP). NOTE: For TDD in this release there is no TFCS required.
>PRACH partitioning	MD		PRACH partitioning 10.3.6.53	Default value is the value of "PRACH partitioning" for the previous PRACH in the list (note : the first occurrence is then MP)
>Persistence scaling factors	OP		Persistence scaling factors 10.3.6.48	This IE shall not be present if only ASC 0 and ASC 1 are defined. If this IE is absent, value is the value of "Persistence scaling factors" for the previous PRACH in the list if value exists
>AC-to-ASC mapping	OP		AC-to-ASC mapping 10.3.6.1	Only present in SIB 5 If this IE is absent, value is the value of "AC-to-ASC mapping" for the previous PRACH in the list if value exists
>CHOICE <i>mode</i>	MP			
>>FDD				
>>>Primary CPICH TX power	MD		Primary CPICH TX power 10.3.6.61	Default value is the value of "Primary CPICH TX power" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>Constant value	MD		Constant value 10.3.6.11	Default value is the value of "Constant value" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>PRACH power offset	MD		PRACH power offset 10.3.6.54	Default value is the value of "PRACH power offset" for the previous PRACH in the list (note : the first occurrence is then MP)
>>>RACH transmission parameters	MD		RACH transmission parameters	Default value is the value of "RACH transmission parameters" for the previous



			10.3.6.67	PRACH in the list (note : the first occurrence is then MP)
>>>AICH info	MD		AICH info 10.3.6.2	Default value is the value of "AICH info" for the previous PRACH in the list (note : the first occurrence is then MP)
>>TDD				(no data)

NOTE: If the setting of the PRACH information results in that a combination of a signature, preamble scrambling code and subchannel corresponds to a RACH with different TFS and/or TFCS, then for that combination only the TFS/TFCS of the PRACH listed first is valid, where PRACHs listed in System Information Block type 5 shall be counted first.

### 10.3.6.56 Predefined PhyCH configuration

This information element concerns a pre- defined configuration of physical channel parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
<b>Uplink radio resources</b>				
Uplink DPCH info	MP		Uplink DPCH info Pre 10.3.6.90	
<b>Downlink radio resources</b>				
Downlink information common for all radio links	OP		Downlink information common for all radio links Pre 10.3.6.26	

### 10.3.6.57 Primary CCPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>mode</i>	MP				
>FDD					
>>TX Diversity indicator	MP		Boolean		
>TDD					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>CHOICE <i>SyncCase</i>	OP				
>>>>>Sync Case 1					
>>>>>>Timeslot	MP		Integer (0...14)	PCCPCH timeslot	
>>>>>>Sync Case 2					
>>>>>>>Timeslot	MP		Integer(0..6)		
>>>>1.28 Mcps TDD					REL-4
>>>>TSTD indicator	MP		TSTD indicator 10.3.6.85a		REL-4
>>Cell parameters ID	OP		Cell parameters Id 10.3.6.9	The Cell parameters ID is described in [32].	
>>Block STTD indicator	MP		Block STTD indicator 10.3.6.7		

### 10.3.6.58 Primary CCPCH info post

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>TDD option</i>	MP				REL-4
>3.84 Mcps TDD					REL-4
>>CHOICE <i>SyncCase</i>	MP				
>>>Sync Case 1					
>>>>Timeslot	MP		Integer (0...14)	PCCPCH timeslot	
>>>>Sync Case 2					
>>>>>Timeslot	MP		Integer(0..6)		
>1.28 Mcps TDD					REL-4
>>TSTD indicator	MP		TSTD indicator 10.3.6.85a		REL-4
Cell parameters ID	MP		Cell parameters Id 10.3.6.9	The Cell parameters ID is described in [32].	
Block STTD indicator	MP		Block STTD indicator 10.3.6.7		

### 10.3.6.59 Primary CCPCH TX Power

NOTE: Only for TDD.

Information Element/group name	Need	Multi	Type and reference	Semantics description
Primary CCPCH Tx Power	MP		Integer(6..43 )	In dBm

### 10.3.6.60 Primary CPICH info

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary scrambling code	MP		Integer(0..511)	

### 10.3.6.61 Primary CPICH Tx power

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary CPICH Tx Power	MP		Integer(-10..50)	Power in dBm.

### 10.3.6.62 Primary CPICH usage for channel estimation

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Primary CPICH usage for channel estimation	MP		Enumerated( Primary CPICH may be used, Primary CPICH shall not be used)	

### 10.3.6.63 PUSCH info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Integer(1..8)	Default value is 1
Common timeslot info	OP		Common timeslot info 10.3.6.10	
PUSCH timeslots and codes	OP		Uplink Timeslots and Codes 10.3.6.94	

### 10.3.6.64 PUSCH Capacity Allocation info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>PUSCH allocation</i>	MP			
>PUSCH allocation pending				(no data)
>PUSCH allocation assignment				
>>PUSCH allocation period info	MP		Allocation Period Info 10.3.6.4	
>>PUSCH power control info	OP		PUSCH power control info 10.3.6.65	
>>TFCS ID	MD		Integer(1..8)	Default is 1.
>>CHOICE <i>Configuration</i>	MP			
>>>Old configuration				
>>>>PUSCH Identity	MP		Integer(1..Hi PUSCHIdentities)	
>>>New configuration				
>>>>PUSCH info	MP		PUSCH info 10.3.6.63	
>>>>PUSCH Identity	OP		Integer(1..HiPUSCHIdentities)	

### 10.3.6.65 PUSCH power control info

NOTE: Only for TDD.

Interference level measured for a frequency at the UTRAN access point used by UE to set PUSCH output power.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
UL target SIR	MP		Real (-11 .. 20 by step of 0.5)	in dB	
CHOICE <i>TDD option</i>	MP				REL-4
>3.84 Mcps TDD				(no data)	REL-4
>1.28 Mcps TDD					REL-4
>>TPC Step Size	OP		Integer (1, 2, 3)	In dB	REL-4
>>DL CCTrCH TPC List	OP	0..<maxCC TrCH>		DL CCTrCH identities for TPC commands associated with this UL CCTrCH	REL-4
>>>DL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21		REL-4

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..Hi PUSCHIdentities)	
>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		Transport Format Combination Set 10.3.5.20	

Condition	Explanation
Block17	This IE is <u>not needed</u> absent-in System Information Block 17. Otherwise it is optional.

10.3.6.67 RACH transmission parameters

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Mmax	MP		Integer(1..32)	Maximum number of preamble cycles
NB01min	MP		Integer(0..50)	Sets lower bound for random back-off
NB01max	MP		Integer(0..50)	Sets upper bound for random back-off

### 10.3.6.68 Radio link addition information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL 10.3.6.21	
TFCI combining indicator	OP		TFCI combining indicator 10.3.6.81	
SCCPCH Information for FACH	OP		SCCPCH Information for FACH 10.3.6.70	Note 1

NOTE 1: These IEs are present when the UE needs to listen to system information on FACH in CELL\_DCH state.

### 10.3.6.69 Radio link removal information

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

## 10.3.6.70 SCCPCH Information for FACH

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Secondary CCPCH info	MP		Secondary CCPCH info 10.3.6.71	
TFCS	MP		Transport format combination set 10.3.5.20	For FACHs and PCH
FACH/PCH information	MP	1 to <maxFACH HPCH>		
>TFS	MP		Transport format set 10.3.5.23	For each FACHs and PCH
>Transport channel identity	MP		Transport channel identity 10.3.5.18	
>CTCH indicator	MP		Boolean	The value "TRUE" indicates that a CTCH is mapped on the FACH, and "FALSE" that no CTCH is mapped.
CHOICE mode				
>FDD				
>>References to system information blocks	MP	1 to <maxSIB-FACH>		
>>>Scheduling information	MP		Scheduling information 10.3.8.16	
>>>SIB type SIBs only	MP		SIB Type SIBs only, 10.3.8.22	
>TDD				(No data)

NOTE: TFS for PCH shall be the first "FACH/PCH information" in the list if a PCH exists for the respective secondary CCPCH.

## 10.3.6.71 Secondary CCPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73	May only be sent for SCCPCH channels not carrying the PCH.
>>Secondary scrambling code	OP		Secondary scrambling code 10.3.6.74	May only be sent for SCCPCH channels not carrying the PCH.
>>STTD indicator	MD		STTD Indicator 10.3.6.78	Default value is "TRUE"
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	
>>Code number	MP		Integer(0..Spreading factor - 1)	
>>Pilot symbol existence	MD		Boolean	TRUE means the existence. Default value is "TRUE"
>>TFCI existence	MD		Boolean	TRUE means the existence. Default value is "TRUE"
>>Fixed or Flexible Position	MD		Enumerated (Fixed, Flexible)	Default value is "Flexible"
>>Timing Offset	MD		Integer(0..38144 by step of 256)	Chip Delay of the Secondary CCPCH relative to the Primary CCPCH. Default value is 0.
>TDD				
>>Offset	MP		Integer (0..Repetition Period -1)	SFN modulo Repetition period = offset. Repetition period is the one indicated in the accompanying Common timeslot info IE
>>Common timeslot info	MP		Common timeslot info 10.3.6.10	
>>Individual timeslot info	MP		Individual timeslot info 10.3.6.37	
>>Code List	MP	1 to 16		
>>>Channelisation Code	MP		Enumerated((16/1)..(16/16))	

## 10.3.6.72 Secondary CCPCH system information

Information element	Need	Multi	Type and reference	Semantics description
Secondary CCPCH system information	MP	1 to <maxSCC PCH>		
>Secondary CCPCH info	MP		Secondary CCPCH info 10.3.6.71	Note 1
>TFCS	MD		Transport format combination set 10.3.5.20	For FACHs and PCH Default value is the value of "TFCS" for the previous SCCPCH in the list (note : the first occurrence is then MP)
>FACH/PCH information	MD	1 to <maxFACH PCH>		Default value is the value of "FACH/PCH" for the previous SCCPCH in the list (note : the first occurrence is then MP)
>>TFS	MP		Transport format set 10.3.5.23	For each FACH and PCH Note 2
>>Transport channel identity	MP		Transport channel identity 10.3.5.18	
>>CTCH indicator	MP		Boolean	The value "TRUE" indicates that a CTCH is mapped on the FACH, and "FALSE" that no CTCH is mapped.
>PICH info	OP		PICH info 10.3.6.49	PICH info is present only when PCH is multiplexed on Secondary CCPCH

NOTE 1: The secondary CCPCHs carrying a PCH shall be listed first.

NOTE 2: TFS for PCH shall be the first "FACH/PCH information" in the list if a PCH exists for the respective secondary CCPCH.

## 10.3.6.73 Secondary CPICH info

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
Channelisation code	MP		Integer(0..255)	SF=256

## 10.3.6.74 Secondary scrambling code

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Secondary scrambling code	MP		Integer(1..15)	



## 10.3.6.75 SFN Time info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Activation time SFN	MP		Integer (0..4095)	System frame number start of the physical channel existence.
Duration	MP		Integer(1..4096)	Total number of frames the physical channel will exist.

## 10.3.6.75a Special Burst Scheduling

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Special Burst Generation Period	MP		Integer (2, 4, 8, 16, 32, 64, 128, 256)	Value in radio frames

## 10.3.6.76 SSdT cell identity

NOTE: Only for FDD.

This IE is used to associate a cell identity with a given radio link.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SSdT cell id	MP		Enumerated (a, b, c, d, e, f, g, h)	

## 10.3.6.77 SSdT information

NOTE: Only for FDD.

This information element indicates the status (e.g. initiated/terminated) of the Site Selection.

Diversity Transmit power control (SSdT). It is used to change the SSdT status. The parameter 'code word set' indicates how cell identities are coded (using many bits or few, values are long, medium, or short).

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
S field	MP		Integer (1, 2)	In bits	
Code Word Set	MP		Enumerated (long, medium, shortSSdT off)		
SSdT UL	OP		Enumerated (UL, ULandDL)		REL-4

NOTE: These parameters shall be set optionally associated with DL DPCH info but not for each RL.

## 10.3.6.78 STTD indicator

Indicates whether STTD is used or not.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
STTD Indicator	MP		Boolean	TRUE means that STTD is used

### 10.3.6.78a SYNC\_UL info

NOTE: Only for 1.28 Mcps TDD.

Information Element/ Group name	Need	Multi	Type and reference	Semantics description	Version
SYNC_UL codes bitmap	MP		Bitstring(8)	00000001 indicates code 0 can be used,10000001 indicates that codes 0 and 7 can be used.	REL-4
UL Target SIR	MP		Real(-11 .. 20 by step of 0.5)	In dB	REL-4
Power Ramping Step	MP		Integer(0,1,2,3)	In dB	REL-4
Max SYNC_UL Transmissions	MP		Integer(1,2,4,8)	Maximum numbers of SYNC_UL transmissions in a power ramping sequence.	REL-4
Mmax	MP		Integer(1..32)	Maximum number of synchronisation attempts.	REL-4

### 10.3.6.79 TDD open loop power control

This information element contains parameters for open loop power control setting for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.59	For path loss calculation	
<i>CHOICE TDD option</i>	MP				REL-4
>3.84 Mcps TDD					REL-4
>>Alpha	OP		Alpha 10.3.6.5		
>>PRACH Constant Value	MP		Constant Value 10.3.6.11	Operator controlled PRACH Margin	
>>DPCH Constant Value	MP		Constant Value 10.3.6.11	Operator controlled UL DPCH Margin	
>>PUSCH Constant Value	OP		Constant Value 10.3.6.11	Operator controlled PUSCH Margin	
>>UE positioning related parameters	<i>CV-IPDLs</i>				REL-4
>>>IPDL-Alpha	MP		Alpha 10.3.6.5		REL-4
>>>Max power increase	MP		Integer (0..3)	In db	REL-4
>1.28 Mcps TDD				(no data)	REL-4

Condition	Explanation
<i>IPDLs</i>	This IE is present only if idle periods are applied

### 10.3.6.80 TFC Control duration

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFC Control duration	MP		Integer (1, 2, 4, 8, 16, 24, 32, 48, 64, 128, 192, 256, 512)	Defines the period in multiples of 10 ms frames for which the defined TFC sub-set is to be applied.

### 10.3.6.81 TFCI Combining Indicator

NOTE: Only for FDD.

This IE indicates whether the TFCI (field 2), which will be transmitted on the DPCCH of a newly added radio link, should be soft-combined with the others in the TFCI (field 2) combining set. This IE can only be sent when the UE is in CELL\_DCH state with a DSCH transport channel assigned and when there is a 'hard' split in the TFCI field (such that TFCI1 and TFCI2 have their own separate block coding).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCI combining indicator	MP		Boolean	TRUE means that TFCI is combined

### 10.3.6.82 TGPSI

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPSI	MP		Integer(1..MaxTGPS)	Transmission Gap Pattern Sequence Identifier Establish a reference to the compressed mode pattern sequence. Up to <MaxTGPS> simultaneous compressed mode pattern sequences can be used.

### 10.3.6.83 Time info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Activation time	MD		Activation time 10.3.3.1	Frame number start of the physical channel existence. Default value is "Now"
Duration	MD		Integer(1..4096, infinite)	Total number of frames the physical channel will exist. Default value is "infinite".

## 10.3.6.84 Timeslot number

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>TDD option</i>	MP				REL-4
>3.84 Mcps TDD					REL-4
>>Timeslot number	MP		Integer(0..14)	Timeslot within a frame	
>1.28 Mcps TDD					REL-4
>>Timeslot number	MP		Integer(0..6)	Timeslot within a subframe	REL-4

## 10.3.6.85 TPC combination index

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TPC combination index	MP		Integer(0..5)	Radio links with the same index have TPC bits, which for the UE are known to be the same.

## 10.3.6.85a TSTD indicator

NOTE: Only for 1.28Mcps TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
TSTD indicator	MD		Boolean	Default value is "TRUE"	REL-4

## 10.3.6.86 TX Diversity Mode

NOTE: Only for FDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Tx diversity Mode	MP		Enumerated (none, STTD, closed loop mode1, closed loop mode2)	

## 10.3.6.87 UL interference

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL interference	MP		Integer (-110..-70)	In dBm

NOTE: In TDD, this IE is a timeslot specific value.

10.3.6.88 Uplink DPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info 10.3.6.91	
CHOICE <i>mode</i>	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>>Scrambling code number	MP		Integer(0..16777215)	
>>>Number of DPDCH	MD		Integer(2..maxDPDCH)	Default value is 1. Number of DPDCH is 1 in HANDOVER TO UTRAN COMMAND
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	Minimum allowed SF of the channelisation code for data part
>>>TFCI existence	MD		Boolean	TRUE means existence. Default value is "TRUE"
>>>Number of FBI bits	CH		Integer (1, 2)	In bits. Number of FBI bits is needed if SSdT or FB Mode Transmit Signalling is supported.
>>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				
>>Uplink Timing Advance Control	OP		Uplink Timing Advance Control 10.3.6.96	
>>>UL CCTrCH List	MP	1 to <maxCCTrCH>		
>>>>TFCS ID	MD		Integer(1..8)	Default value is 1.
>>>>Time info	MP		Time info 10.3.6.83	
>>>>Common timeslot info	MD		Common timeslot info 10.3.6.10	Default is the current Common timeslot info
>>>>Uplink DPCH timeslots and codes	MD		Uplink Timeslots and Codes 10.3.6.94	Default is to use the old timeslots and codes.

Condition	Explanation
Single	This IE is <u>mandatory present</u> included-if IE "Number of DPDCH" is "1" and not needed otherwise

10.3.6.89 Uplink DPCH info Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	MP		Uplink DPCH power control info Post 10.3.6.92	
CHOICE <i>mode</i>	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>>Reduced scrambling code number	MP		Integer(0..8191)	Sub-range of values for initial use upon handover to UTRAN.
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	SF of the channelisation code for data part There is only one DPDCH for this case
>TDD				
>>Uplink Timing Advance Control	OP		Uplink Timing Advance Control 10.3.6.96	
>>>Uplink DPCH timeslots and codes	MP		Uplink Timeslots and Codes 10.3.6.94	

10.3.6.90 Uplink DPCH info Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info Pre 10.3.6.93	
CHOICE <i>mode</i>	MP			
>FDD				
>>TFCI existence	MP		Boolean	TRUE means existence. Default value is "TRUE"
>>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				
>>>Common timeslot info	MP		Common Timeslot Info 10.3.6.10	

Condition	Explanation
<i>Single</i>	This IE is <u>mandatory present</u> included-if IE "Number of DPDCH" is "1" and <u>not needed otherwise</u>

10.3.6.91 Uplink DPCH power control info

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and 1.28Mcps TDD and parameters for uplink open loop power control in 3.84Mcps TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>mode</i>	MP				
>FDD					
>>DPCCH Power offset	MP		Integer(-164,..-6 by step of 2)	In dB	
>>>PC Preamble	MP		Integer (0..7)	In number of frames	
>>>>SRB delay	MP		Integer(0..7)	In number of frames	
>>>>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands	
>>>>>>TPC step size	CV- <i>algo</i>		Integer (1, 2)	In dB	
>TDD					
>>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB	
>>>>CHOICE <i>UL OL PC info</i>	MP				
>>>>>Broadcast UL OL PC info			Null	No data	
>>>>>>Individually Signalled	OP				
>>>>>>>CHOICE <i>TDD option</i>	MP				REL-4
>>>>>>>>3.84Mcps TDD					REL-4
>>>>>>>>>Individual timeslot interference info	MP	1 to <maxTS>			
>>>>>>>>>>Individual timeslot interference	MP		Individual timeslot interference 10.3.6.38		
>>>>>>>>>>>DPCH Constant Value	OP		Constant Value 10.3.6.11	Quality Margin	
>>>>>>>>>>>>1.28 Mcps TDD					REL-4
>>>>>>>>>>>>>TPC step size	MP		Integer(1,2,3)		REL-4
>>>>>>>>>>>>>>>Primary CCPCH Tx Power	OP		Primary CCPCH Tx Power 10.3.6.59	For Pathloss Calculation	

Condition	Explanation
<i>algo</i>	The IE is mandatory <u>present</u> if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

### 10.3.6.92 Uplink DPCH power control info Post

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>mode</i>	MP				
>FDD					
>>DPCCH Power offset	MP		Integer(-110..-50 by step of 4)	In dB	
>>PC Preamble	MP		Integer (0..7)	in number of frames	
>>SRB delay	MP		Integer (0..7)	In number of frames	
>TDD					
>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB	
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84Mcps TDD					REL-4
>>>>UL Timeslot Interference	MP		UL Interference 10.3.6.87		
>>>1.28Mcps TDD				(no data)	REL-4

Condition	Explanation
<i>algo</i>	The IE is mandatory <u>present</u> if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

### 10.3.6.93 Uplink DPCH power control info Pre

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and parameters for uplink open loop power control in 3.84 Mcps TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>mode</i>	MP				
>FDD					
>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands	
>>TPC step size	<i>CV-algo</i>		Integer (1, 2)	In dB	
>TDD				(No data)	
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84Mcps TDD					REL-4
>>DPCH Constant Value	MP		Constant Value 10.3.6.11	Quality Margin	
>>>1.28Mcps TDD				(no data)	REL-4

Condition	Explanation
<i>Algo</i>	The IE is mandatory <u>present</u> if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

### 10.3.6.94 Uplink Timeslots and Codes

NOTE: Only for TDD



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Dynamic SF usage	MP		Boolean	
First Individual timeslot info	MP		Individual timeslot info 10.3.6.37	Individual timeslot info for the first timeslot used by the physical layer.
First timeslot Code List	MP	1..2		Code list used in the timeslot. given in First individual timeslot info.
>Channelisation Code	MP		Enumerated( (1/1),(2/1),(2/2),(4/1)..(4/4),(8/1)..(8/8),(16/1)..(16/16) )	
CHOICE <i>more timeslots</i>	MP			
>No more timeslots				(no data)
>Consecutive timeslots				
>>Number of additional timeslots	MP		Integer(1..maxTS-1)	The timeslots used by the physical layer shall be timeslots: N mod maxTS (N+1) mod maxTS ... (N+k) mod maxTS in that order, where N is the timeslot number in the First individual timeslot info and k the Number of additional timeslots. The additional timeslots shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) as the first timeslot.
>Timeslot list				
>>Additional timeslot list	MP	1 to <maxTS-1>		The first instance of this parameter corresponds to the timeslot that shall be used second by the physical layer, the second to the timeslot that shall be used third and so on.
>>>CHOICE <i>parameters</i>	MP			
>>>>Same as last				
>>>>>Timeslot number	MP		Timeslot Number 10.3.6.84	This physical layer shall use the same parameters (e.g. channelisation codes, midamble shifts etc.) for this timeslot as for the last one.
>>>>>New parameters				
>>>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.37	
>>>>>Code List	MP	1..2		
>>>>>>Channelisation Code	MP		Enumerated( (1/1),(2/1),(2/2),(4/1)..(4/4),(8/1)..(8/8),(16/1)..(16/16) )	

### 10.3.6.95 Uplink Timing Advance

NOTE: Only for 3.84 Mcps TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
UL Timing Advance	MP		Integer (0..63)	Absolute timing advance value to be used to avoid large delay spread at the NodeB	

### 10.3.6.96 Uplink Timing Advance Control

NOTE: Only for TDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>Timing Advance</i>	MP				
>Disabled			Null	Indicates that no timing advance is applied	
>Enabled					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>UL Timing Advance	MD		Uplink Timing Advance 10.3.6.95	Absolute timing advance value to be used to avoid large delay spread at the NodeB. Default value is the existing value for uplink timing advance.	
>>>>Activation Time	OP		Activation Time 10.3.3.1	Frame number timing advance is to be applied. This IE is required when a new UL Timing Advance adjustment is specified and Activation Time is not otherwise specified in the RRC message.	
>>>1.28 Mcps TDD				(no data)	REL-4
>>>>Uplink synchronisation parameters	MD			Default: Uplink synchronisation parameters is 1. Uplink synchronisation frequency is 1.	REL-4
>>>>>Uplink synchronisation step size	MP		Integer(1..8)	This parameter specifies the step size to be used for the adjustment of the uplink transmission timing	REL-4
>>>>>Uplink synchronisation frequency	MP		Integer(1..8)	This parameter specifies the frequency of the adjustment of the uplink transmission timing	REL-4
>>>>Synchronization parameters	OP				
>>>>>SYNC_UL codes bitmap	MD		Bitstring(8)	00000001 indicates code 0 can be used, 10000001 indicates that codes 0 and 7 can be used. Default: all SYNC_UL codes can be used	REL-4
>>>>>FPACH info	MP		FPACH info 10.3.6.?		REL-4
>>>>>SYNC_UL procedure	MD			Default is: Max SYNC_UL Transmission is 2. Power Ramping	REL-4

>>>>Max SYNC_UL Transmissions	MP		Integer(1,2,4,8)	Step is 2. Maximum numbers of SYNC_UL transmissions in a power ramping sequence.	REL-4
>>>>Power Ramping Step	MP		Integer(0,1,2,3)	In dB	REL-4

## 10.3.7 Measurement Information elements

### 10.3.7.1 Additional measurements list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Additional measurements	MP	1 to <MaxAdditionalMeas>		
>Additional measurement identity	MP		Measurement identity 10.3.7.48	

### 10.3.7.2 Cell info

Includes non-frequency related cell info used in the IE "inter-frequency cell info list" and "intra frequency cell info list".

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Cell individual offset	MD		Real(-10..10 by step of 0.5)	In dB Default value is 0 dB Used to offset measured quantity value	
Reference time difference to cell	OP		Reference time difference to cell 10.3.7.60	In chips. This IE is absent for serving cell.	
Read SFN indicator	MP		Boolean	TRUE indicates that read of SFN is requested for the target cell	
CHOICE <i>mode</i>	MP				
>FDD					
>>Primary CPICH info	OP		Primary CPICH info 10.3.6.60	This IE is absent only if measuring RSSI only (broadband measurement.)	
>>Primary CPICH Tx power	OP		Primary CPICH Tx power 10.3.6.61	Required if calculating pathloss.	
>>TX Diversity Indicator	MP		Boolean		
>TDD					
>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57		
>>Primary CCPCH TX power	OP		Primary CCPCH TX power 10.3.6.59		
>>Timeslot list	OP	1 to <maxTS>		The UE shall report Timeslot ISCP values according the order of the listed Timeslot numbers	
>>>CHOICE <i>TDD option</i>	MP				REL-4
>>>>3.84 Mcps TDD					REL-4
>>>>>Timeslot number	MP		Integer (0...14)	Timeslot numbers, for which the UE shall report Timeslot ISCP	
>>>>>Burst Type	MD		Enumerated (Type1, Type2)	Use for Timeslot ISCP measurements only. Default value is "Type1"	
>>>>1.28Mcps TDD					REL-4
>>>>>Timeslot number	MP		Integer (1...6)	Timeslot numbers, for which the UE shall report Timeslot ISCP	REL-4
Cell Selection and Re-selection Info	CV- <i>BCHopt</i>		Cell Selection and Re-selection for SIB11/12Info 10.3.2.4	This IE is absent for serving cell. For neighbouring cell, if HCS is not used and all the parameters in cell selection and re-selection info are	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
				default value, this IE is absent.	

Condition	Explanation
<i>BCHopt</i>	This IE is Optional when sent in SYSTEM INFORMATION, Otherwise, the IE is not needed

### 10.3.7.3 Cell measured results

Includes non-frequency related measured results for a cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell Identity	OP		Cell Identity 10.3.2.2	
SFN-SFN observed time difference	OP		SFN-SFN observed time difference 10.3.7.63	
Cell synchronisation information	OP		Cell synchronisation information 10.3.7.6	
<i>CHOICE mode</i> >FDD	MP			
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>CPICH Ec/N0	OP		Integer(0..50)	According to CPICH_Ec/No in [19] and [20]
>>CPICH RSCP	OP		Integer(0..91)	According to CPICH_RSCP in [19] and [20]
>>Pathloss >TDD	OP		Integer(46..158)	In dB
>>Cell parameters Id	MP		Cell parameters Id 10.3.6.9	
>>Proposed TGSN	OP		Integer (0..14)	Proposal for the next TGSN
>>Primary CCPCH RSCP	OP		Primary CCPCH RSCP info 10.3.7.54	
>>Pathloss	OP		Integer(46..158)	In dB
>>Timeslot list	OP	1 to <maxTS>		
>>>Timeslot ISCP	MP		Timeslot ISCP Info 10.3.7.65	The UE shall report the Timeslot ISCP in the same order as indicated in the cell info

### 10.3.7.4 Cell measurement event results

Includes non-frequency related cell reporting quantities.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH info	MP	1 to <maxCellM eas>	Primary CPICH info 10.3.6.60	
>TDD				
>>Primary CCPCH info	MP	1 to <maxCellM eas>	Primary CCPCH info 10.3.6.57	

### 10.3.7.5 Cell reporting quantities

Includes non-frequency related cell reporting quantities.

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SFN-SFN observed time difference reporting indicator	MP		Enumerated( No report, type 1, type 2)	
Cell synchronisation information reporting indicator	MP		Boolean	
Cell Identity reporting indicator	MP		Boolean	
CHOICE <i>mode</i>	MP			
>FDD				
>>CPICH Ec/N0 reporting indicator	MP		Boolean	
>>CPICH RSCP reporting indicator	MP		Boolean	
>>Pathloss reporting indicator	MP		Boolean	
>TDD				
>>Timeslot ISCP reporting indicator	MP		Boolean	
>>Proposed TGSN Reporting required	MP		Boolean	
>>Primary CCPCH RSCP reporting indicator	MP		Boolean	
>>Pathloss reporting indicator	MP		Boolean	

### 10.3.7.6 Cell synchronisation information

The IE "Cell synchronisation information" contains the OFF and Tm as defined in [7] and [8] and the four most significant bits of the difference between the 12 least significant bits of the RLC Transparent Mode COUNT-C in the UE and the SFN of the measured cell. It is notified to SRNC by Measurement Report message or Measurement Information Element in other RRC messages

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>COUNT-C-SFN frame difference	OP			
>>>COUNT-C-SFN high	MP		Integer(0..3840 by step of 256)	in frames
>>>OFF	MP		Integer(0..255)	in frames
>>Tm	MP		Integer(0..38399)	in chips
>TDD				
>>COUNT-C-SFN frame difference	OP			
>>>COUNT-C-SFN high	MP		Integer(0..3840 by step of 256)	in frames
>>>OFF	MP		Integer(0..255)	in frames

NOTE: This measurement is only used in TDD when cells are not SFN synchronised

10.3.7.7 Event results

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>event result</i>	MP			
>Intra-frequency measurement event results			Intra-frequency measurement event results 10.3.7.37	
>Inter-frequency measurement event results			Inter-frequency measurement event results 10.3.7.17	
>Inter-RAT measurement event results			Inter-RAT measurement event results 10.3.7.28	For IS-2000 results, include fields of the <i>Pilot Strength Measurement Message</i> from subclause 2.7.2.3.2.5 of TIA/EIA/IS-2000.5
>Traffic volume measurement event results			Traffic volume measurement event results 10.3.7.69	
>Quality measurement event results			Quality measurement event results 10.3.7.57	
>UE internal measurement event results			UE internal measurement event results 10.3.7.78	
>UE positioning measurement event results			UE positioning measurement event results 10.3.7.101	

CHOICE <i>event result</i>	Condition under which the given <i>event result</i> is chosen
Intra-frequency measurement event results	If measurement type = intra-frequency measurement
Inter-frequency measurement event results	If measurement type = inter-frequency measurement
Inter-RAT measurement event results	If measurement type = inter-RAT measurement
Traffic volume measurement event results	If measurement type = traffic volume measurement
Quality measurement event results	If measurement type = Quality measurement
UE internal measurement event results	If measurement type = UE internal measurement
UE positioning measurement event results	If measurement type = UE positioning measurement

10.3.7.8 FACH measurement occasion info



Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
FACH Measurement occasion cycle length coefficient	OP		Integer(1..12)		
Inter-frequency FDD measurement indicator	MP		Boolean	TRUE means that measurements are required	
Inter-frequency TDD 3.84 Mcps measurement indicator	MP		Boolean	TRUE means that measurements are required	REL-4
Inter-frequency TDD 1.28 Mcps measurement indicator	MP		Boolean	TRUE means that measurements are required	
Inter-RAT measurement indicators	OP	1 to <maxOther RAT>			
>RAT type	MP		Enumerated(GSM, IS2000)		

10.3.7.9 Filter coefficient

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Filter coefficient	MD		Integer(0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 15, 17, 19)	Default value is 0

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	<i>CV-Penalty used</i>			
>Temporary_offset1	MP		Integer(10, 20, 30, 40, 50, 60, 70, infinity)	[dB]
>Temporary_offset2	<i>CV-FDD-Quality-Measure</i>		Integer(10, 20, 30, 40, 50, 60, 70, infinity)	[dB]

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

10.3.7.11 HCS neighbouring cell information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
HCS_PRIO	MD		Integer (0..7)	Default value = 0
Qhcs	MD		Qhcs 10.3.7.54a	Default value = 0
HCS Cell Re-selection Information	MP		HCS Cell Re-selection Information 10.3.7.10	

10.3.7.12 HCS Serving cell information

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
HCS_PRIO	MD		Integer (0..7)	Default value = 0
Qhcs	MD		Qhcs 10.3.7.54a	Default value = 0
T <sub>CRmax</sub>	MD		Enumerated( not used, 30, 60, 120, 180, 240)	[s] Default value is not used
N <sub>CR</sub>	<i>CV-UE speed detector</i>		Integer(1..16 )	Default value = 8
T <sub>CRmaxHyst</sub>	<i>CV-UE speed detector</i>		Enumerated( not used, 10, 20, 30, 40, 50, 60, 70)	[s]

Condition	Explanation
<i>UE Speed detector</i>	This IE is <del>not needed</del> allowed if T <sub>CRmax</sub> equals 'not used' else Mandatory <u>present</u>

10.3.7.13 Inter-frequency cell info list

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Inter-frequency cell removal</i>	OP			
>Remove all inter-frequency cells				No data
>Remove some inter-frequency cells				
>>Removed inter-frequency cells	MP	1 .. <maxCellMeas>		
>>>Inter-frequency cell id	MP		Integer(0 .. <maxCellMeas>-1)	
>No inter-frequency cells removed				No data
New inter-frequency cells	OP	1 to <maxCellMeas>		
>Inter-frequency cell id	MD		Integer(0 .. <maxCellMeas>-1)	
>Frequency info	MD		Frequency info 10.3.6.36	Default value is the value of the previous "frequency info" in the list (note : the first occurrence is then MP)
>Cell info	MP		Cell info 10.3.7.2	
Cell for measurement	CV- <i>BCHopt</i>	1 to <maxCellMeas>		
>Inter-frequency cell id	MP		Integer(0 .. <maxCellMeas>-1)	

Condition	Explanation
<i>BCHopt</i>	This IE is not needed when sent in SYSTEM INFORMATION. Otherwise, the IE is Optional

10.3.7.14 Inter-frequency event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency event identity	MP		Enumerated(2a, 2b, 2c, 2d, 2e, 2f)	

## 10.3.7.15 Inter-frequency measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency measurement results	OP	1 to <maxFreq>		
>Frequency info	MD		Frequency info 10.3.6.36	Default value is the value of the previous "frequency info" in the list (note : the first occurrence is then MP)
>UTRA carrier RSSI	OP		Integer(0..76 )	According to UTRA_carrier_RSSI_LEV in [19] and [20]
>Inter-frequency cell measurement results	OP	1 to <maxCellMeas>		
>>Cell measured results	MP		Cell measured results 10.3.7.3	

10.3.7.16 Inter-frequency measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency cell info list	MP		Inter-frequency cell info list 10.3.7.13	Measurement object
Inter-frequency measurement quantity	OP		Inter-frequency measurement quantity 10.3.7.18	
Inter-frequency reporting quantity	OP		Inter-frequency reporting quantity 10.3.7.21	
Reporting cell status	CV-reporting		Reporting cell status 10.3.7.61	
Measurement validity	OP		Measurement validity 10.3.7.51	
Inter-frequency set update	OP		Inter-frequency set update 10.3.7.22	
<b>CHOICE <i>report criteria</i></b>	MP			
>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>Inter-frequency measurement reporting criteria			Inter-frequency measurement reporting criteria 10.3.7.19	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

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

10.3.7.17 Inter-frequency measurement event results

This IE contains the measurement event results that are reported to UTRAN for inter-frequency measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency event identity	MP		Inter-frequency event identity 10.3.7.14	
Inter-frequency cells	OP	1 to <maxFreq>		
>Frequency info	MP		Frequency info 10.3.6.36	
>Non frequency related measurement event results	MP		Cell measurement event results 10.3.7.4	

### 10.3.7.18 Inter-frequency measurement quantity

The quantity the UE shall measure in case of inter-frequency measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>reporting criteria</i>	MP			
>Intra-frequency reporting criteria				
>>Intra-frequency measurement quantity	MP		Intra-frequency measurement quantity 10.3.7.38	
>Inter-frequency reporting criteria				
>>Filter coefficient	MP		Filter coefficient 10.3.7.9	
>>CHOICE <i>mode</i>	MP			
>>>FDD				
>>>>Measurement quantity for frequency quality estimate	MP		Enumerated(CPICH Ec/N0, CPICH RSCP)	
>>>TDD				
>>>>Measurement quantity for frequency quality estimate	MP		Enumerated(Primary CCPCH RSCP)	

### 10.3.7.19 Inter-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an inter-frequency measurements. All events concerning inter-frequency measurements are labelled 2x where x is a,b,c..

Event 2a: Change of best frequency.

Event 2b: The estimated quality of the currently used frequency is below a certain threshold **and** the estimated quality of a non-used frequency is above a certain threshold.

Event 2c: The estimated quality of a non-used frequency is above a certain threshold.

Event 2d: The estimated quality of the currently used frequency is below a certain threshold.

Event 2e: The estimated quality of a non-used frequency is below a certain threshold.

Event 2f: The estimated quality of the currently used frequency is above a certain threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeasEvent>		
>Inter-frequency event identity	MP		Inter-frequency event identity 10.3.7.14	
>Threshold used frequency	CV-clause 0		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm
>W used frequency	CV-clause 0		Real(0, 0.1..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0, 0.5..14.5 by step of 0.5)	In event 2a, 2b, 2c, 2d, 2e, 2f
>Time to trigger	MP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms.
>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>Parameters required for each non-used frequency	OP	1 to <maxFreq>		
>>Threshold non used frequency	CV-clause 1		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm
>>W non-used frequency	CV-clause 1		Real(0, 0.1..2.0 by step of 0.1)	

Condition	Explanation
Clause 0	The IE is mandatory present in if "inter frequency event identity" is set to 2a,2b, 2d, or 2f, otherwise the IE is not needed
Clause 1	The IE is mandatory present in if "inter frequency event identity" is set to 2a, 2b, 2c or 2e, otherwise the IE is not needed

### 10.3.7.20 Inter-frequency measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-frequency cell info list	OP		Inter-frequency cell info list 10.3.7.13	

### 10.3.7.21 Inter-frequency reporting quantity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UTRA Carrier RSSI	MP		Boolean	TRUE means report is requested
Frequency quality estimate	MP		Boolean	TRUE means that report is requested
Non frequency related cell reporting quantities	MP		Cell reporting quantities 10.3.7.5	

### 10.3.7.22 Inter-frequency SET UPDATE

NOTE: Only for FDD.

Contains the changes of the active set associated with a non-used frequency. This information makes it possible to use events defined for Intra-frequency measurement within the same non-used frequency for Inter-frequency measurement reporting criteria. This information also controls if the UE should use autonomous updating of the active set associated with a non-used frequency.

Information Element/group name	Need	Multi	Type and reference	Semantics description
UE autonomous update mode	MP		Enumerated (On, On with no reporting, Off)	
Non autonomous update mode	<i>CV-Update</i>			
>Radio link addition information	OP	1 to <maxRL>		Radio link addition information required for each RL to add
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Note 1
>Radio link removal information	OP	1 to <MaxRL>		Radio link removal information required for each RL to remove
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Note 1

Condition	Explanation
<i>Update</i>	The IE is mandatory <u>present</u> if IE"UE autonomous update mode" is set to "Off", otherwise the IE is not needed.

NOTE 1: If it is assumed that CPICH downlink scrambling code is always allocated with sufficient reuse distances, CPICH downlink scrambling code will be enough for designating the different radio links.

### 10.3.7.23 Inter-RAT cell info list

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



Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Inter-RAT cell removal</i>	MP			
>Remove all inter-RAT cells				No data
>Remove some inter-RAT cells				
>>Removed inter-RAT cells	MP	1 to <maxCellMeas>		
>>>Inter-RAT cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no inter-RAT cells				
New inter-RAT cells	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	OP		Integer(0 .. <maxCellMeas> - 1)	
>CHOICE <i>Radio Access Technology</i>	MP			
>>GSM				
>>>Cell individual offset	MP		Integer (-50..50 )	In dB Used to offset measured quantity value
>>>Cell selection and re-selection info	OP		Cell selection and re-selection info for SIB11/12 10.3.2.4	see 8.6.7.3 If HCS is not used and all the parameters in cell selection and re-selection info are default values, this IE is absent.
>>>BSIC	MP		BSIC 10.3.8.2	
>>>Band indicator	MP		Enumerated (DCS 1800 band used, PCS 1900 band used)	Indicates how to interpret the BCCH ARFCN
>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
>>IS-2000				
>>>System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Subclause 3. 7.3.3.2.27, <i>Candidate Frequency Neighbour List Message</i>
Cell for measurement	OP	1 to <maxCellMeas>		
>Inter-RAT cell id	MP		Integer(0 .. <maxCellMeas> -1)	

### 10.3.7.24 Inter-RAT event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT event identity	MP		Enumerated (3a, 3b, 3c, 3d)	

### 10.3.7.25 Inter-RAT info

Inter-RAT info defines the target system for redirected cell selection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT info	MP		Enumerated (GSM)	

10.3.7.26 Inter-RAT measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT measurement results	OP	1 to <maxOther RAT>		
>CHOICE <i>system</i>	MP			At least one spare value needed
>>GSM				
>>>Measured GSM cells	MP	1 to <maxReportedGSMCells>		
>>>>GSM carrier RSSI	OP		bit string(6)	RXLEV, [46]. The RSSI bits are numbered b0 to b5, where b0 is the least significant bit.
>>>>Pathloss	OP		Integer(46..158)	In dB
>>>>CHOICE <i>BSIC</i>	MP			
>>>>>Verified BSIC				
>>>>>inter-RAT cell id	MP		Integer(0..<maxCellMeasurements>-1)	
>>>>>Non verified BSIC				
>>>>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
>>>>>>Observed time difference to GSM cell	OP		Observed time difference to GSM cell 10.3.7.52	

## 10.3.7.27 Inter-RAT measurement

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

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

## 10.3.7.28 Inter-RAT measurement event results

This IE contains the measurement event results that are reported to UTRAN for inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT event identity	MP		Inter-RAT event identity 10.3.7.24	
Cells to report	MP	1 to <maxCellMeas>		
>CHOICE <i>BSIC</i>	MP			
>>Verified <i>BSIC</i>				
>>>inter-RAT cell id	MP		Integer(0..<maxCellMeas>-1)	
>>Non verified <i>BSIC</i>				
>>>BCCH ARFCN	MP		Integer (0..1023)	[45]

### 10.3.7.29 Inter-RAT measurement quantity

The quantity the UE shall measure in case of inter-RAT measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement quantity for UTRAN quality estimate	OP		Intra-frequency measurement quantity 10.3.7.38	
CHOICE <i>system</i>	MP			
>GSM				
>>Measurement quantity	MP		Enumerated(GSM Carrier RSSI, Pathloss)	
>>Filter coefficient	MP		Filter coefficient 10.3.7.9	
>>BSIC verification required	MP		Enumerated(required, not required)	
>IS2000				
>>TADD $E_c/I_0$	MP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.6 of TIA/EIA/IS-2000.5
>>TCOMP $E_c/I_0$	MP		Integer(0..15)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>SOFT SLOPE	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.3 and 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>ADD_INTERCEPT	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5

Also, this IE must be set to "required" if IE "Observed time difference to GSM cell" in IE "Inter-RAT reporting quantity" is set to "true".

### 10.3.7.30 Inter-RAT measurement reporting criteria

The triggering of the event-triggered reporting for an inter-RAT measurement. All events concerning inter-RAT measurements are labelled 3x where x is a,b,c..

Event 3a: The estimated quality of the currently used UTRAN frequency is below a certain threshold **and** the estimated quality of the other system is above a certain threshold.

Event 3b: The estimated quality of other system is below a certain threshold.

Event 3c: The estimated quality of other system is above a certain threshold.

Event 3d: Change of best cell in other system.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeas Event>		
>Inter-RAT event identity	MP		Inter-RAT event identity 10.3.7.24	
>Threshold own system	CV-clause 0		Integer (-115..0)	
>W	CV-clause 0		Real(0, 0.1..2.0 by step of 0.1)	In event 3a
>Threshold other system	CV-clause 1		Integer (-115..0)	In event 3a, 3b, 3c
>Hysteresis	MP		Integer (0..15)	
>Time to trigger	MP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report.
>Reporting cell status	OP		Reporting cell status 10.3.7.61	

Condition	Explanation
Clause 0	The IE is mandatory <u>present</u> if " Inter-RAT event identity" is set to "3a", otherwise the IE is not needed
Clause 1	The IE is mandatory <u>present</u> if " Inter-RAT event identity" is set to 3a, 3b or 3c, otherwise the IE is not needed

10.3.7.31 Inter-RAT measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT cell info list	OP		Inter-RAT cell info list 10.3.7.23	

10.3.7.32 Inter-RAT reporting quantity

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UTRAN estimated quality	MP		Boolean	
CHOICE <i>system</i>	MP			
>GSM				
>>Pathloss	MP		Boolean	
>>Observed time difference to GSM cell	MP		Boolean	
>>GSM Carrier RSSI	MP		Boolean	

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 <i>Intra-frequency cell removal</i>	OP			
>Remove all intra-frequency cells				No data
>Remove some intra-frequency cells				
>>Removed intra-frequency cells	MP	1 to <maxCellMeas>		
>>>Intra-frequency cell id	MP		Integer(0 .. <maxCellMeas> - 1)	
>Remove no intra-frequency cells				
New intra-frequency cell	OP	1 to <maxCellMeas>		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	
Cell for measurement	CV- <i>BCHopt</i>	1 to <maxCellMeas>		
>Intra-frequency cell id	MP		Integer(0 .. <maxCellMeas>-1)	

Condition	Explanation
<i>BCHopt</i>	This IE is not needed when sent in SYSTEM INFORMATION. Otherwise, the IE is Optional

### 10.3.7.34 Intra-frequency event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency event identity	MP		Enumerated (1a,1b,1c,1d,1e,1f,1g,1h,1i)	

### 10.3.7.35 Intra-frequency measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency measurement results	OP	1 to <maxCellMeas>		
>Cell measured results	MP		Cell measured results 10.3.7.3	

## 10.3.7.36 Intra-frequency measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency cell info list	OP		Intra-frequency cell info list 10.3.7.33	Measurement object
Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
Intra-frequency reporting quantity	OP		Intra-frequency reporting quantity 10.3.7.41	
Reporting cell status	CV-reporting		Reporting cell status 10.3.7.61	
Measurement validity	OP		Measurement validity 10.3.7.51	
<i>CHOICE report criteria</i>	OP			
>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

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

## 10.3.7.37 Intra-frequency measurement event results

This IE contains the measurement event results that are reported to UTRAN for intra-frequency measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency event identity	MP		Intra-frequency event identity 10.3.7.34	
Cell measurement event results	MP		Cell measurement event results 10.3.7.4	

### 10.3.7.38 Intra-frequency measurement quantity

The quantity the UE shall measure in case of intra-frequency measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Filter coefficient	MP		Filter coefficient 10.3.7.9	
CHOICE <i>mode</i>	MP			
>FDD				
>>Measurement quantity	MP		Enumerated(C PICH Ec/N0, CPICH RSCP, Pathloss, UTRA Carrier RSSI)	If used in Inter system measurement quantity only Ec/N0 and RSCP is allowed. If used in inter-frequency measurement quantity RSSI is not allowed.
>TDD				
>>Measurement quantity list	MP	1 to 4		
>>>Measurement quantity	MP		Enumerated(Pr imary CCPCH RSCP, Pathloss, Timeslot ISCP, UTRA Carrier RSSI)	If used in inter-frequency measurement quantity RSSI is not allowed.

### 10.3.7.39 Intra-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an intra-frequency measurement. All events concerning intra-frequency measurements are labelled 1x where x is a, b, c....

Event 1a: A Primary CPICH enters the Reporting Range (FDD only).

Event 1b: A Primary CPICH leaves the Reporting Range (FDD only).

Event 1c: A Non-active Primary CPICH becomes better than an active Primary CPICH (FDD only).

Event 1d: Change of best cell [Note 1] (FDD only).

Event 1e: A Primary CPICH becomes better than an absolute threshold (FDD only).

Event 1f: A Primary CPICH becomes worse than an absolute threshold (FDD only).

Event 1g: Change of best cell in TDD.

Event 1h: Timeslot ISCP below a certain threshold (TDD only).

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



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeas Event>		
>Intra-frequency event identity	MP		Intra-frequency event identity 10.3.7.34	
>Triggering condition 1	CV-clause 0		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells)	Indicates which cells can trigger the event
>Triggering condition 2	CV-clause 6		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells, Detected set cells, Detected set cells and monitored set cells)	Indicates which cells can trigger the event
>Reporting Range Constant	CV-clause 2		Real(0..14.5 by step of 0.5)	In dB. In event 1a,1b.
>Cells forbidden to affect Reporting range	CV-clause 1	1 to <maxCellMeas>		In event 1a,1b
>>CHOICE mode	MP			
>>>FDD				
>>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>>>TDD				
>>>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57	
>W	CV-clause 2		Real(0.0..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0..7.5 by step of 0.5)	In dB.
>Threshold used frequency	CV-clause 3		Integer (-115..165)	Range used depend on measurement quantity. CPICH RSCP -115..-25 dBm CPICH Ec/No -24..0 dB Pathloss 30..165dB ISCP -115..-25 dBm
>Reporting deactivation threshold	CV-clause 4		Integer(0, 1, 2, 3, 4, 5, 6, 7)	In event 1a Indicates the maximum number of cells allowed in the active set in order for event 1a to occur. 0 means not applicable

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

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

## 10.3.7.40 Intra-frequency measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency measurement identity	MD		Measurement identity 10.3.7.48	The intra-frequency measurement identity has default value 1.
Intra-frequency cell info list	OP		Intra-frequency cell info list 10.3.7.33	
Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
Intra-frequency reporting quantity for RACH Reporting	OP		Intra-frequency reporting quantity for RACH Reporting 10.3.7.42	
Maximum number of reported cells on RACH	OP		Maximum number of reported cells on RACH 10.3.7.43	
Reporting information for state CELL_DCH	OP		Reporting information for state CELL_DCH 10.3.7.62	Note 1

NOTE 1: The reporting of intra-frequency measurements is activated when state CELL\_DCH is entered.

## 10.3.7.41 Intra-frequency reporting quantity

Contains the reporting quantity information for an intra-frequency measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Reporting quantities for active set cells	MP		Cell reporting quantities 10.3.7.5	
Reporting quantities for monitored set cells	MP		Cell reporting quantities 10.3.7.5	
Reporting quantities for detected set cells	OP		Cell reporting quantities 10.3.7.5	

## 10.3.7.42 Intra-frequency reporting quantity for RACH reporting

Contains the reporting quantity information for an intra-frequency measurement report, which is sent on the RACH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SFN-SFN observed time difference reporting indicator	MP		Enumerated( No report, type 1, type 2)	
CHOICE <i>mode</i>	MP			
>FDD				
>>Reporting quantity	MP		Enumerated( CPICH Ec/No, CPICH RSCP, Pathloss, No report)	
>TDD				
>>Reporting quantity list	MP	1 to 2		
>>>Reporting quantity	MP		Enumerated( Timeslot ISCP, Primary CCPCH RSCP, No report)	

#### 10.3.7.43 Maximum number of reported cells on RACH

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Maximum number of reported cells	MP		Enumerated (no report, current cell, current cell + best neighbour, current cell+2 best neighbours, ..., current cell+6 best neighbours)	

#### 10.3.7.44 Measured results

Contains the measured results of the quantity indicated optionally by Reporting Quantity in Measurement Control. "Measured results" can be used for both event trigger mode and periodical reporting mode. The list should be in the order of the value of the measurement quality (the first cell should be the best cell). The "best" FDD cell has the largest value when the measurement quantity is "Ec/No" or "RSCP". On the other hand, the "best" cell has the smallest value when the measurement quantity is "Pathloss". The "best" TDD cell has the largest value when measurement quantity is "Primary CCPCH RSCP".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Measurement</i>	MP			
>Intra-frequency measured results list			Intra-frequency measured results list 10.3.7.35	
>Inter-frequency measured results list			Inter-frequency measured results list 10.3.7.15	
>Inter-RAT measured results list			Inter-RAT measured results list 10.3.7.26	
>Traffic volume measured results list			Traffic volume measured results list 10.3.7.67	
>Quality measured results list			Quality measured results list 10.3.7.55	
>UE Internal measured results			UE Internal measured results 10.3.7.76	
>UE positioning measured results			UE positioning measured results 10.3.7.99	

### 10.3.7.45 Measured results on RACH

Contains the measured results on RACH of the quantity indicated optionally by Reporting Quantity in the system information broadcast on BCH. The list should be in the order of the value of the measurement quality (the first cell should be the best cell). The "best" FDD cell has the largest value when the measurement quantity is "Ec/No" or "RSCP". On the other hand, the "best" cell has the smallest value when the measurement quantity is "Pathloss". The "best" TDD cell has the largest value when measurement quantity is "Primary CCPCH RSCP".

Information Element/group name	Need	Multi	Type and reference	Semantics description	Version
Measurement result for current cell					
CHOICE <i>mode</i>	MP				
>FDD					
>>CHOICE <i>measurement quantity</i>	MP				
>>>CPICH Ec/N0			Integer(0..50 )	In dB. According to CPICH_Ec/No in [19]	
>>>CPICH RSCP			Integer(0..91 )	In dBm. According to CPICH_RSCP_LE V in [19]	
>>>Pathloss			Integer(46..158)	In dB	
>TDD					
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>Timeslot List	OP	1 to 14			
>>>>>Timeslot ISCP	MP		Timeslot ISCP info 10.3.7.65	The UE shall report the Timeslot ISCP in the same order as indicated in the cell info	
>>>1.28 Mcps TDD					REL-4
>>>>Timeslot List	OP	1 to 6			REL-4
>>>>>Timeslot ISCP	MP		Timeslot ISCP info 10.3.7.65	The UE shall report the Timeslot ISCP in the same order as indicated in the cell info	REL-4
>>Primary CCPCH RSCP	OP		Primary CCPCH RSCP info 10.3.7.54		
Measurement results for monitored cells	OP	1 to 7			
>SFN-SFN observed time difference	OP		SFN-SFN observed time difference 10.3.7.63	It is absent for current cell	
>CHOICE <i>mode</i>	MP				
>>FDD					
>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60		
>>>CHOICE <i>measurement quantity</i>	OP			It is absent for current cell	
>>>>CPICH Ec/N0			Integer(0..50 )	In dB. According to CPICH_Ec/No in [19].	
>>>>CPICH RSCP			Integer(0..91 )	In dBm. According to CPICH_RSCP_LE V in [19].	
>>>>Pathloss			Integer(46..158)	In dB	
>>TDD					
>>>Cell parameters Id	MP		Cell parameters Id 10.3.6.9		
>>>Primary CCPCH RSCP	MP		Primary		

			CCPCH RSCP info 10.3.7.54		
--	--	--	---------------------------------	--	--

NOTE 1: Monitored cells consist of current cell and neighbouring cells.

### 10.3.7.46 Measurement Command

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement command	MP		Enumerated(Setup, Modify, Release)	

### 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	

### 10.3.7.48 Measurement Identity

A reference number that is used by the UTRAN at modification and release of the measurement, and by the UE in the measurement report.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement identity	MP		Integer(1..16)	

### 10.3.7.49 Measurement reporting mode

Contains the type of Measurement Report transfer mode and the indication of periodical/event trigger.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement Report Transfer Mode	MP		enumerated (Acknowledged mode RLC, Unacknowledged mode RLC)	
Periodical Reporting / Event Trigger Reporting Mode	MP		Enumerated (Periodical reporting, Event trigger)	

### 10.3.7.50 Measurement Type

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement Type	MP		Enumerated(Intra-frequency, Inter-frequency, Inter-RAT, Traffic volume, Quality, UE internal, UE positioning)	

### 10.3.7.51 Measurement validity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE state	MP		Enumerated(CELL_DCH, all states except CELL_DCH, all states)	Indicates the states, in which measurement reporting shall be conducted. The values 'all states except CELL_DCH' and 'all states' are used for measurement type 'traffic volume reporting'.

### 10.3.7.52 Observed time difference to GSM cell

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Observed time difference to GSM cell	OP		Integer(0,,4095)	According to GSM_TIME in [19] and [20]

### 10.3.7.53 Periodical reporting criteria

Contains the periodical reporting criteria information. It is necessary only in the periodical reporting mode.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Amount of reporting	MD		Integer(1, 2, 4, 8, 16, 32, 64, Infinity)	The default value is infinity.
Reporting interval	MP		Integer(250, 500, 1000, 2000, 3000, 4000, 6000, 8000, 12000, 16000, 20000, 24000, 28000, 32000, 64000)	Indicates the interval of periodical report. Interval in milliseconds

### 10.3.7.53a PLMN identities of neighbour cells

This IE contains the PLMN identities of neighbour cells.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMNs of intra-frequency cells list	OP	1 to <maxCellIM eas>		
>PLMN identity	MD		PLMN identity 10.3.1.11	Default value is the previous "PLMN identity" in the list. The default value for the first PLMN in the list is the identity of the selected PLMN if the "PLMN type" in the variable SELECTED_PLMN has the value "GSM-MAP"; otherwise, the first occurrence is MP.
PLMNs of inter-frequency cells list	OP	1 to <maxCellIM eas>		
>PLMN identity	MD		PLMN identity 10.3.1.11	Default value is the previous "PLMN identity" in the list. The default value for the first PLMN in the list is the identity of the selected PLMN if the "PLMN type" in the variable SELECTED_PLMN has the value "GSM-MAP"; otherwise, the first occurrence is MP.
PLMNs of inter-RAT cells list	OP	1 to <maxCellIM eas>		
>PLMN identity	MD		PLMN identity 10.3.1.11	Default value is the previous "PLMN identity" in the list. The default value for the first PLMN in the list is the identity of the selected PLMN if the "PLMN type" in the variable SELECTED_PLMN has the value "GSM-MAP"; otherwise, the first occurrence is MP.

### 10.3.7.54 Primary CCPCH RSCP info

NOTE: Only for TDD

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Primary CCPCH RSCP	MP		Integer(0..91 )	According to P-CCPCH_RSCP_LEV in [19] and [20]

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 (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)
--	--	--	--	---

10.3.7.55 Quality measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
BLER measurement results	OP	1 to <maxTrCH >		
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	transport channel type = DCH
>DL Transport Channel BLER	OP		Integer (0..63)	According to BLER_LOG in [19] and [20]
CHOICE <i>mode</i>	MP			
>FDD				No data
>TDD				
>>SIR measurement results	OP	1 to <MaxCCTrCH >		SIR measurements for DL CCTrCH
>>>TFCS ID	MP		Integer(1...8)	
>>>Timeslot list	MP	1 to <maxTS>		for all timeslot on which the CCTrCH is mapped on
>>>>SIR	MP		Integer(0..63 )	According to UE_SIR in [20]

## 10.3.7.56 Quality measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Quality reporting quantity	OP		Quality reporting quantity 10.3.7.59	
<i>CHOICE report criteria</i>	MP			
>Quality measurement reporting criteria			Quality measurement reporting criteria 10.3.7.58	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

## 10.3.7.57 Quality measurement event results

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport channels causing the event	OP	1 to <maxTrCH >		
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	transport channel type = DCH

## 10.3.7.58 Quality measurement reporting criteria

Event 5a: Number of bad CRCs on a certain transport channel exceeds a threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH >		
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	transport channel type = DCH
>Total CRC	MP		Integer(1..512)	Number of CRCs
>Bad CRC	MP		Integer(1..512)	Number of CRCs
>Pending after trigger	MP		Integer(1..512)	Number of CRCs

## 10.3.7.59 Quality reporting quantity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Transport Channel BLER	MP		Boolean	TRUE means report requested
Transport channels for BLER reporting	<i>CV-BLER reporting</i>	1 to <maxTrCH >		The default, if no transport channel identities are present, is that the BLER is reported for all downlink transport channels
>DL Transport channel identity	MP		Transport channel identity 10.3.5.18	transport channel type = DCH
CHOICE <i>mode</i>	MP			
>FDD				No data
>TDD				
>>SIR measurement list	OP	1 to <maxCCTrCH>		SIR measurements shall be reported for all listed TFCS IDs
>>>TFCS ID	MP		Integer(1..8)	

Condition	Explanation
<i>BLER reporting</i>	This information element is <u>not needed</u> absent if 'DL Transport Channel BLER' is 'False' and optional, if 'DL Transport Channel BLER' is 'True'

## 10.3.7.60 Reference time difference to cell

In the System Information message, the reference time difference to cell indicates the timing difference between the primary CCPCH of the current cell and the primary CCPCH of a neighbouring cell..

In the Measurement Control message, the reference time difference to cell indicates the timing difference between UE uplink transmission timing and the primary CCPCH of a neighbouring cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>accuracy</i>	MP			
>40 chips				
>>Reference time difference	MP		Integer(0..38400 by step of 40)	In chips
>256 chips				
>>Reference time difference	MP		Integer(0..38400 by step of 256)	In chips
>2560 chips				
>>Reference time difference	MP		Integer(0..38400 by step of 2560)	In chips

## 10.3.7.61 Reporting Cell Status

Indicates maximum allowed number of cells to report and whether active set cells and/or virtual active set cells and/or monitored set cells on and/or detected set cells used frequency and/or monitored set cells on non used frequency should/should not be included in the IE "Measured results".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>reported cell</i>	MP			
>Report cells within active set				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set cells on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within active set and/or monitored set cells on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set and/or detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report all active set cells + cells within monitored set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within monitored set and/or detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	

>Report cells within virtual active set				
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report cells within monitored set on non-used frequency				
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report cells within monitored and/or active set on non-used frequency				
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report all virtual active set cells + cells within monitored set on non-used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ....., virtual/active set cells+6)	
>Report cells within active set or within virtual active set				
>>Maximum number of reported cells	MP		Integer (1..12)	
>Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency				
>>Maximum number of reported cells	MP		Integer(1..12)	

### 10.3.7.62 Reporting information for state CELL\_DCH

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency reporting quantity	MP		Intra-frequency reporting quantity 10.3.7.41	
Measurement Reporting Mode	MP		Measurement Reporting Mode 10.3.7.49	
CHOICE <i>report criteria</i>	MP			
>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	



## 10.3.7.63 SFN-SFN observed time difference

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>type</i>	MP			
>Type 1			Integer(0..9830399)	According to T1_SFN-SFN_TIME in [19] and [20]
>Type 2			Integer(0..40961)	According to T2_SFN-SFN_TIME in [19] and [20]

## 10.3.7.64 Time to trigger

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Time to trigger	MP		Integer(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	Time in ms

## 10.3.7.65 Timeslot ISCP info

NOTE: Only for TDD

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
Timeslot ISCP	MP		Integer (0..91)	According to UE_TS_ISCP_LEV in [20]

## 10.3.7.66 Traffic volume event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume event identity	MP		Enumerated(4a, 4b)	

## 10.3.7.67 Traffic volume measured results list

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

10.3.7.68 Traffic volume measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement Object	OP		Traffic volume measurement Object 10.3.7.70	
Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
Measurement validity	OP		Measurement validity 10.3.7.51	
<i>CHOICE report criteria</i>	MP			
>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.72	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

10.3.7.69 Traffic volume measurement event results

Contains the event result for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink transport channel type causing the event	MP		Enumerated(DCH,RACH,USCH)	USCH is TDD only
UL Transport Channel identity	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	
Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	

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

### 10.3.7.70 Traffic volume measurement object

Contains the measurement object information for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement objects	MP	1 to <maxTrCH >		
>Uplink transport channel type	MP		Enumerated(DCH,RACH,USCH)	USCH is TDD only
>UL Target Transport Channel ID	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	

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

### 10.3.7.71 Traffic volume measurement quantity

Contains the measurement quantity information for a traffic volume measurement.

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

Condition	Explanation
A/V	This IE is <u>mandatory present</u> when "Average RLC buffer" or "Variance of RLC buffer payload" is chosen and not needed otherwise.

### 10.3.7.72 Traffic volume measurement reporting criteria

Contains the measurement reporting criteria information for a traffic volume measurement.

Event 4a: Transport Channel Traffic Volume [15] exceeds an absolute threshold.

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH >		
>Uplink transport channel type	OP		Enumerated(DCH,RACH,USCH)	USCH is TDD only
>UL Transport Channel ID	CV-UL-DCH/USCH		Transport channel identity 10.3.5.18	
>Parameters required for each Event	OP	1 to <maxMeas perEvent>		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.66	
>>Reporting Threshold	MP		Enumerated(8,16,32,64,128,256,512,1024,2K,3K,4K,6K,8K,12K,16K,24K,32K,48K,64K,96K,128K,192K,256K,384K,512K,768K)	Threshold in bytes And N Kbytes = N*1024 bytes
>>Time to trigger	OP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
>>Pending time after trigger	OP		Integer(250, 500, 1000, 2000, 4000, 8000, 16000)	Indicates the period of time during which it is forbidden to send any new measurement reports with the same Traffic volume event identity even if the triggering condition is fulfilled. Time in milliseconds
>>Tx interruption after trigger	OP		Integer (250, 500, 1000, 2000, 4000, 8000, 16000)	Time in milliseconds. Indicates how long the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.

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

10.3.7.73 Traffic volume measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement identity	MD		Measurement identity 10.3.7.48	The traffic volume measurement identity has default value 4.
Traffic volume measurement object	OP		Traffic volume measurement object	

			10.3.7.70	
Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.71	
Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.74	
Measurement validity	OP		Measurement validity 10.3.7.51	
Measurement Reporting Mode	MP		Measurement Reporting Mode 10.3.7.49	
<i>CHOICE reporting criteria</i>	MP			
>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.72	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	

### 10.3.7.74 Traffic volume reporting quantity

Contains the reporting quantity information for a traffic volume measurement.

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RLC Buffer Payload for each RB	MP		Boolean	
Average of RLC Buffer Payload for each RB	MP		Boolean	
Variance of RLC Buffer Payload for each RB	MP		Boolean	

### 10.3.7.75 UE internal event identity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE internal event identity	MP		Enumerated(6a,6b,6c,6d,6e, 6f, 6g)	

## 10.3.7.76 UE internal measured results

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>mode</i>	MP				
>FDD					
>>UE Transmitted Power	OP		UE Transmitted Power info 10.3.7.85		
>>UE Rx-Tx report entries	OP	1 to <maxRL>			
>>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Primary CPICH info for each cell included in the active set	
>>>UE Rx-Tx time difference type 1	MP		UE Rx-Tx time difference type 1 10.3.7.83	UE Rx-Tx time difference in chip for each RL included in the active set	
>TDD					
>>UE Transmitted Power list	OP	1 to <maxTS>		UE Transmitted Power for each used uplink timeslot in ascending timeslot number order	
>>>UE Transmitted Power	MP		UE Transmitted Power info 10.3.7.85		
>>CHOICE <i>TDD option</i>	MP				REL-4
>>>3.84 Mcps TDD					REL-4
>>>>Applied TA	OP		Uplink Timing Advance 10.3.6.95	Uplink timing advance applied by the UE	
>>>1.28 Mcps TDD					REL-4
>>>> UpPCH <sub>ADV</sub>	OP		UpPCH <sub>ADV</sub> 10.3.7.112		REL-4

10.3.7.77 UE internal measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE internal measurement quantity	OP		UE internal measurement quantity 10.3.7.79	
UE internal reporting quantity	OP		UE internal reporting quantity 10.3.7.82	
<i>CHOICE report criteria</i>	MP			
>UE internal measurement reporting criteria			UE internal measurement reporting criteria 10.3.7.80	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

<i>CHOICE report criteria</i>	Condition under which the given <i>report criteria</i> is chosen
UE internal measurement reporting criteria	Chosen when UE internal measurement event triggering is required
Periodical reporting criteria	Chosen when periodical reporting is required
No reporting	Chosen when this measurement only is used as additional measurement to another measurement

10.3.7.78 UE internal measurement event results

This IE contains the measurement event results that are reported to UTRAN for UE internal measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE internal event identity	MP		UE internal event identity 10.3.7.75	
<i>CHOICE mode</i>	MP			
>FDD				
>Primary CPICH info	<i>CV-clause 1</i>		Primary CPICH info 10.3.6.60	
>TDD				(no data)

Condition	Explanation
<i>Clause 1</i>	This IE is mandatory <u>present</u> if "UE internal event identity" is set to "6f" or "6g", otherwise the IE is not needed

10.3.7.79 UE internal measurement quantity

The quantity the UE shall measure in case of UE internal measurement.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Measurement quantity	MP		Enumerated(UE Transmitted Power, UTRA Carrier RSSI, UE Rx-Tx time difference)	
>TDD				
>>Measurement quantity	MP		Enumerated(UE Transmitted Power, UTRA Carrier RSSI)	
Filter coefficient	MP		Filter coefficient 10.3.7.9	

### 10.3.7.80 UE internal measurement reporting criteria

The triggering of the event-triggered reporting for a UE internal measurement. All events concerning UE internal measurements are labelled 6x where x is a, b, c.... In TDD, the events 6a - 6d are measured and reported on timeslot basis.

Event 6a: The UE Transmitted Power becomes larger than an absolute threshold

Event 6b: The UE Transmitted Power becomes less than an absolute threshold

Event 6c: The UE Transmitted Power reaches its minimum value

Event 6d: The UE Transmitted Power reaches its maximum value

Event 6e: The UE RSSI reaches the UEs dynamic receiver range

Event 6f: The UE Rx-Tx time difference for a RL included in the active set becomes larger than an absolute threshold

Event 6g: The UE Rx-Tx time difference for a RL included in the active set becomes less than an absolute threshold

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each UE internal measurement event	OP	1 to <maxMeas Event>		
>UE internal event identity	MP		UE internal event identity 10.3.7.75	
>Time-to-trigger	MP		Integer(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	Time in ms. Indicates the period of time between the timing of event detection and the timing of sending Measurement Report.
>UE Transmitted Power Tx power threshold	CV- <i>clause 1</i>		Integer(-50..33)	Power in dBm. In event 6a, 6b.
>UE Rx-Tx time difference threshold	CV- <i>clause 2</i>		Integer(768..1280)	Time difference in chip. In event 6f, 6g.

Condition	Explanation
<i>Clause 1</i>	The IE is mandatory <u>present</u> if "UE internal event identity" is set to "6a" or "6b", otherwise the IE is not needed
<i>Clause 2</i>	The IE is mandatory <u>present</u> if "UE internal event identity" is set to "6f" or "6g", otherwise the IE is not needed

10.3.7.81 UE internal measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE internal measurement identity	MD		Measurement identity 10.3.7.48	The UE internal measurement identity has default value 5.
UE internal measurement quantity	MP		UE internal measurement quantity 10.3.7.79	

10.3.7.82 UE Internal reporting quantity

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
UE Transmitted Power	MP		Boolean		
CHOICE <i>mode</i>	MP				
>FDD					
>>UE Rx-Tx time difference	MP		Boolean		
>TDD					
>>CHOICE <i>TDD option</i>					REL-4
>>>3.84 Mcps TDD				(no data)	REL-4
>>Applied TA	MP		Boolean		
>>>1.28 Mcps TDD					REL-4
>>>> UpPCH <sub>ADV</sub>	MP		Boolean		REL-4

## 10.3.7.83 UE Rx-Tx time difference type 1

The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time), of the downlink DPCH frame from the measured radio link. This measurement is for FDD only.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE Rx-Tx time difference type 1	MP		Integer(768..1280)	In chips.

## 10.3.7.84 UE Rx-Tx time difference type 2

The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time), of the downlink DPCH frame from the measured radio link.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE Rx-Tx time difference type 2	MP		Real(768.0..1279.9375 by step of 0.0625)	Resolution of 1/16 of a chip.

## 10.3.7.85 UE Transmitted Power info

Information Element/Group name	Need	Multi	IE type and reference	Semantics description
UE Transmitted Power	MP		Integer (0..104)	According to UE_TX_POWER in [19] and [20]

## 10.3.7.86 UE positioning Ciphering info

This IE contains information for the ciphering of UE positioning assistance data broadcast in System Information.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Ciphering Key Flag	MP		Bitstring(1)	See note 1
Ciphering Serial Number	MP		Integer(0..65535)	The serial number used in the DES ciphering algorithm

NOTE 1: The UE always receives two (2) cipher keys during the location update procedure. One of the keys is time-stamped to be current one and the other is time-stamped to be the next one. Thus, the UE always has two cipher keys in memory. The Cipher Key Change Indicator in this broadcast message instructs the UE whether to use current or next cipher key for deciphering the received broadcast message. The UE shall interpret this IE as follows:

- **Ciphering Key Flag**(previous message) = **Ciphering Key Flag**(this message) => Deciphering Key not changed
- **Ciphering Key Flag**(previous message) <> **Ciphering Key Flag**(this message) => Deciphering Key changed

10.3.7.87 UE positioning Error

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Error reason	MP		Enumerated(ER1, ER2, ER3, ER4, ER5, ER6, ER7, ER8)	Note 1
GPS Additional Assistance Data Request	OP		UE positioning GPS Additional Assistance Data Request 10.3.7.88a	

NOTE 1: The following table gives the mapping of the IE "Error reason"

Value	Indication
ER1	There were not enough cells to be received when performing mobile-based OTDOA-IPDL.
ER2	There were not enough GPS satellites to be received, when performing UE-based GPS location.
ER3	Location calculation assistance data missing.
ER4	Requested method not supported.
ER5	Undefined error.
ER6	Location request denied by the user.
ER7	Location request not processed by the user and timeout
ER8	Reference cell for GPS is not the serving cell

10.3.7.88 UE positioning GPS acquisition assistance

This IE contains parameters that enable fast acquisition of the GPS signals in UE-assisted GPS positioning.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE <i>Reference Time</i>	MP			
>UTRAN reference time				GPS Time of Week counted in microseconds, given as GPS TOW in milliseconds and GPS TOW remainder in microseconds, UTRAN reference time = 1000 * GPS TOW msec + GPS TOW rem usec
>>GPS TOW msec	MP		Integer(0..6.048*10 <sup>6</sup> -1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit)
>>GPS TOW rem usec	MP		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
>>CHOICE <i>mode</i>				
>>>FDD				
>>>>Primary CPICH Info	OP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>>>TDD				
>>>>cell parameters id	OP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
>>SFN	MP		Integer(0..4095)	
>GPS reference time only				
>>GPS TOW msec	MP		Integer(0..6.048*10 <sup>6</sup> -1)	GPS Time of Week in milliseconds (rounded down to the nearest millisecond unit).
Satellite information	MP	1 to <maxSat>		
>SatID	MP		Integer (0..63)	
>Doppler (0 <sup>th</sup> order term)	MP		Real(-5120..51175 by step of 2.5)	Hz
>Extra Doppler	OP			
>>Doppler (1 <sup>st</sup> order term)	MP		Real (0.966..0.483 by step of 0.023)	Scaling factor 1/42
>>Doppler Uncertainty	MP		Enumerated (12.5,25,50,100,200)	Hz
>Code Phase	MP		Integer(0..1022)	Chips, specifies the centre of the search window
>Integer Code Phase	MP		Integer(0..19)	1023 chip segments
>GPS Bit number	MP		Integer(0..3)	Specifies GPS bit number (20 1023 chip segments)
>Code Phase Search Window	MP		Integer(1023,1,2,3,4,6,8,12,16,24,32,48,64,96,128,192)	Specifies the width of the search window.
>Azimuth and Elevation	OP			
>>Azimuth	MP		Real(0..348.75 by step of 11.25)	Degrees
>>Elevation	MP		Real(0..78.75 by step of 11.25)	Degrees

<b>CHOICE Reference time</b>	<b>Condition under which the given reference time is chosen</b>
UTRAN reference time	The reference time is relating GPS time to UTRAN time (SFN)
GPS reference time only	The time gives the time for which the location estimate is valid

### 10.3.7.88a UE positioning GPS Additional Assistance Data Request

<b>Information Element/Group name</b>	<b>Need</b>	<b>Multi</b>	<b>Type and Reference</b>	<b>Semantics description</b>
Almanac	MP		Boolean	TRUE means requested
UTC Model	MP		Boolean	TRUE means requested
Ionospheric model	MP		Boolean	TRUE means requested
Navigation Model	MP		Boolean	TRUE means requested
DGPS Corrections	MP		Boolean	TRUE means requested
Reference Location	MP		Boolean	TRUE means requested
Reference Time	MP		Boolean	TRUE means requested
Acquisition Assistance	MP		Boolean	TRUE means requested
Real-Time Integrity	MP		Boolean	TRUE means requested
Navigation Model Additional data	CV- <i>Navigation Model</i>			this IE is present only if "Navigation Model" is set to TRUE otherwise it is absent
>GPS Week	MP		Integer (0..1023)	
>GPS_Toe	MP		Integer (0..167)	GPS time of ephemeris in hours of the latest ephemeris set contained by the UE
>T-Toe limit	MP		Integer (0..10)	ephemeris age tolerance of the UE to UTRAN in hours
>Satellites list related data	MP	0 to <maxSat>		
>>SatID	MP		Integer (0..63)	
>>IODE	MP		Integer (0..255)	Issue of Data Ephemeris for SatID

### 10.3.7.89 UE positioning GPS almanac

This IE contains a reduced-precision subset of the ephemeris and clock correction parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
WN <sub>a</sub>	MP		Bit string(8)	
Satellite information	MP	1 to <maxSat>		
>DataID	MP		Integer(0..3)	See [12]
>SatID	MP		Enumerated(0..63)	Satellite ID
>e	MP		Bit string(16)	Eccentricity [12]
>t <sub>oa</sub>	MP		Bit string(8)	Reference Time Ephemeris [12]
>δi	MP		Bit string(16)	
>OMEGADOT	MP		Bit string(16)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles/sec) [12]
>SV Health	MP		Bit string(8)	
>A <sup>1/2</sup>	MP		Bit string(24)	Semi-Major Axis (meters) <sup>1/2</sup> [12]
>OMEGA <sub>0</sub>	MP		Bit string(24)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles) [12]
>M <sub>0</sub>	MP		Bit string(24)	Mean Anomaly at Reference Time (semi-circles) [12]
>ω	MP		Bit string(24)	Argument of Perigee (semi-circles) [12]
>af <sub>0</sub>	MP		Bit string(11)	apparent clock correction [12]
>af <sub>1</sub>	MP		Bit string(11)	apparent clock correction [12]
SV Global Health	OP		Bit string(364)	This enables GPS time recovery and possibly extended GPS correlation intervals. It is specified in page 25 of subframes 4 and 5 [12]

### 10.3.7.90 UE positioning GPS assistance data

This IE contains GPS assistance data.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE positioning GPS reference time	OP		UE positioning GPS reference time 10.3.7.96	
UE positioning GPS reference UE position	OP		Ellipsoid point with altitude and uncertainty ellipsoid 10.3.8.4c	A priori knowledge of UE 3-D position.
UE positioning GPS DGPS corrections	OP		UE positioning GPS DGPS corrections 10.3.7.91	
UE positioning GPS navigation model	OP		UE positioning GPS navigation model 10.3.7.94	
UE positioning GPS ionospheric model	OP		UE positioning GPS ionospheric model 10.3.7.92	
UE positioning GPS UTC model	OP		UE positioning GPS UTC model 10.3.7.97	
UE positioning GPS almanac	OP		UE positioning GPS almanac 10.3.7.89	
UE positioning GPS acquisition assistance	OP		UE positioning GPS acquisition assistance 10.3.7.88	
UE positioning GPS real-time integrity	OP		UE positioning GPS real-time integrity 10.3.7.95	

10.3.7.90a UE positioning GPS Ephemeris and Clock Correction parameters

This IE contains information for GPS ephemeris and clock correction.



Information Element/Group name	Need	Multi	Type and Reference	Semantics description
C/A or P on L2	MP		Bit string(2)	Code(s) on L2 Channel [12]
URA Index	MP		Bit string(4)	User Range Accuracy [12]
SV Health	MP		Bit string(6)	[12]
IODC	MP		Bit string(10)	Issue of Data, Clock [12]
L2 P Data Flag	MP		Bit string(1)	[12]
SF 1 Reserved	MP		Bit string(87)	[12]
TGD	MP		Bit string(8)	Estimated group delay differential [12]
$t_{oc}$	MP		Bit string(16)	apparent clock correction [12]
$af_2$	MP		Bit string(8)	apparent clock correction [12]
$af_1$	MP		Bit string(16)	apparent clock correction [12]
$af_0$	MP		Bit string(22)	apparent clock correction [12]
$C_{rs}$	MP		Bit string(16)	Amplitude of the Sine Harmonic Correction Term to the Orbit Radius (meters) [12]
$\Delta n$	MP		Bit string(16)	Mean Motion Difference From Computed Value (semi-circles/sec) [12]
$M_0$	MP		Bit string(32)	Mean Anomaly at Reference Time (semi-circles) [12]
$C_{uc}$	MP		Bit string(16)	Amplitude of the Cosine Harmonic Correction Term To The Argument Of Latitude (radians) [12]
$e$	MP		Bit string(32)	$c$
$C_{us}$	MP		Bit string(16)	Amplitude of the Sine Harmonic Correction Term To The Argument Of Latitude (radians) [12]
$(A)^{1/2}$	MP		Bit string(32)	Semi-Major Axis (meters) <sup>1/2</sup> [12]
$t_{oe}$	MP		Bit string(16)	Reference Time Ephemeris [12]
Fit Interval Flag	MP		Bit string(1)	[12]
AODO	MP		Bit string(5)	Age Of Data Offset [12]
$C_{ic}$	MP		Bit string(16)	Amplitude of the Cosine Harmonic Correction Term To The Angle Of Inclination (radians) [12]
$\Omega_{A_0}$	MP		Bit string(32)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles) [12]
$C_{is}$	MP		Bit string(16)	Amplitude of the Sine Harmonic Correction Term To The Angle Of Inclination (radians) [12]
$i_0$	MP		Bit string(32)	Inclination Angle at Reference Time (semi-circles) [12]
$C_{rc}$	MP		Bit string(16)	Amplitude of the Cosine Harmonic Correction Term to the Orbit Radius (meters) [12]
$\omega$	MP		Bit string(32)	Argument of Perigee (semi-circles) [12]
$\Omega_{A\dot{0}}$	MP		Bit string(24)	Longitude of Ascending Node of Orbit Plane at Weekly Epoch (semi-circles/sec) [12]
$i\dot{0}$	MP		Bit string(14)	Rate of Inclination Angle (semi-circles/sec) [12]

### 10.3.7.91 UE positioning GPS DGPS corrections

This IE contains DGPS corrections to be used by the UE.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
GPS TOW sec	MP		Integer(0..604799)	seconds GPS time-of-week when the DGPS corrections were calculated
Status/Health	MP		Enumerated(UDRE scale 1.0, UDRE scale 0.75, UDRE scale 0.5, UDRE scale 0.3, UDRE scale 0.2, UDRE scale 0.1, no data, invalid data)	
DPGS information	CV- Status/Health	1 to <maxSat>		If the Cipher information is included these fields are ciphered.
>SatID	MP		Enumerated (0...63)	
>IODE	MP		Integer(0..255)	
>UDRE	MP		Enumerated(UDRE ≤ 1.0 m, 1.0m < UDRE ≤ 4.0m, 4.0m < UDRE ≤ 8.0m, 8.0m < UDRE)	The value in this field shall be multiplied by the UDRE Scale Factor in the IE Status/Health to determine the final UDRE estimate for the particular satellite.
>PRC	MP		Real(-655.04..655.04 by step of 0.32)	meters (different from [13])
>RRC	MP		Real(-4.064..4.064 by step of 0.032)	meters/sec (different from [13])
>Delta PRC2	MP		Integer(-127..127)	meters
>Delta RRC2	MP		Real(-0.224..0.224 by step of 0.032)	meters/sec
>Delta PRC3	CV-DCCH		Integer(-127..127)	meters
>Delta RRC3	CV-DCCH		Real(-0.224..0.224 by step of 0.032)	meters/sec

Condition	Explanation
<i>Status/Health</i>	This IE is mandatory present if "status" is not equal to "no data" or "invalid data", otherwise the IE is not needed
<i>DCCH</i>	This IE is mandatory present if the IE "UE positioning GPS DGPS corrections" it is included in the point-to-point message, otherwise it is optional if the IE "UE positioning GPS DGPS corrections" is included in the broadcast message. Otherwise it is not needed.

### 10.3.7.92 UE positioning GPS ionospheric model

The IE contains fields needed to model the propagation delays of the GPS signals through the ionosphere.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
$\alpha_0$	MP		Bit string(8)	Note 1
$\alpha_1$	MP		Bit string(8)	Note 1
$\alpha_2$	MP		Bit string(8)	Note 1
$\alpha_3$	MP		Bit string(8)	Note 1
$\beta_0$	MP		Bit string(8)	Note 2
$\beta_1$	MP		Bit string(8)	Note 2
$\beta_2$	MP		Bit string(8)	Note 2
$\beta_3$	MP		Bit string(8)	Note 2

NOTE 1: The parameters  $\alpha_n$  are the coefficients of a cubic equation representing the amplitude of the vertical delay [12].

NOTE 2: The parameters  $\beta_n$  are the coefficients of a cubic equation representing the period of the ionospheric model [12].

### 10.3.7.93 UE positioning GPS measured results

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE <i>mode</i>				
>FDD				
>>Primary CPICH Info	OP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	OP		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 <sup>8</sup> -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- <i>capability and request</i>		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 <sub>0</sub>	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 <sup>10</sup> -1))	Scale factor 2 <sup>-10</sup>
>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
<i>Capability and request</i>	This field is <u>mandatory present</u> included only if the UE has this capability <i>and</i> if it was requested in the UE positioning reporting quantity <u>and not needed otherwise.</u>

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	$0.5 \leq P < 0.5625$
I	X	Y	$0.5 * (1 + x/8) * 2^y$	$x_{i-1} \leq P < x_i$
62	110	111	112	$104 \leq P < 112$
63	111	111	--	$112 \leq P$

### 10.3.7.94 UE positioning GPS navigation model

This IE contain information required to manage the transfer of precise navigation data to the GPS-capable UE.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Satellite information	MP	1 to <maxSat >		
>SatID	MP		Enumerated(0..63)	Satellite ID
>Satellite Status	MP		Enumerated(NS_NN, ES_SN, ES_NN, REVD)	See note 1
>GPS Ephemeris and Clock Correction parameters	CV-Satellite status		UE positioning GPS Ephemeris and Clock Correction parameters 10.3.7.90a	

NOTE 1: The UE shall interpret enumerated symbols as follows.

Value	Indication
NS_NN	New satellite, new Navigation Model
ES_SN	Existing satellite, same Navigation Model
ES_NN	Existing satellite, new Navigation Model
REVD	Reserved

Condition	Explanation
Satellite status	The IE is <u>not needed</u> present unless IE "Satellite status" is ES_SN and mandatory present otherwise.

## 10.3.7.95 UE positioning GPS real-time integrity

This IE contains parameters that describe the real-time status of the GPS constellation.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Satellite information	MP	1 to <maxSat >		
>BadSatID	MP		Enumerated(0..63)	

## 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 <sup>8</sup> -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 <i>mode</i>				
>FDD				
>>Primary CPICH Info	OP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	OP		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	

## 10.3.7.97 UE positioning GPS UTC model

The UTC Model field contains a set of parameters needed to relate GPS time to Universal Time Coordinate (UTC).

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
A <sub>1</sub>	MP		Bit string(24)	sec/sec [12]
A <sub>0</sub>	MP		Bit string(32)	seconds [12]
t <sub>ot</sub>	MP		Bit string(8)	seconds [12]
Δt <sub>LS</sub>	MP		Bit string(8)	seconds [12]
WN <sub>t</sub>	MP		Bit string(8)	weeks [12]
WN <sub>LSF</sub>	MP		Bit string(8)	weeks [12]
DN	MP		Bit string(8)	days [12]
Δt <sub>LSF</sub>	MP		Bit string(8)	seconds [12]

## 10.3.7.98 UE positioning IPDL parameters

This IE contains parameters for the IPDL mode. The use of this parameters is described in [29].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
CHOICE <i>mode</i>					REL-4
>FDD					REL-4
>>IP spacing	MP		Integer(5,7,10,15,20,30,40,50)	See [29]	
>>IP length	MP		Integer(5,10)	See [29]	
>>IP offset	MP		Integer(0..9)	Relates the BFN and SFN, should be same as T <sub>cell</sub> defined in [10]; See [29]	
>>Seed	MP		Integer(0..63)	See [29]	
>TDD					REL-4
>>IP spacing	MP		Integer(30,40,50,70,100)	See [33]	REL-4
>>IP_Start	MP		Integer(0..4095)	See [33]	REL-4
>>IP_Slot	MP		Integer(0..14)	See [33]	REL-4
>>IP_PCCPCH	CV-channel		Boolean	See [33]	REL-4
Burst mode parameters	OP				
>Burst Start	MP		Integer(0..15)	See [29] and [33]	
>Burst Length	MP		Integer(10..25)	See [29] and [33]	
>Burst freq	MP		Integer(1..16)	See [29] and [33]	

Condition	Explanation
<i>channel</i>	This IE is present only if the idle slot carries the PCCPCH

## 10.3.7.99 UE positioning measured results

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE positioning OTDOA measured results	OP		UE positioning OTDOA measured results 10.3.7.105	
UE positioning Position estimate info	OP		UE positioning Position estimate info 10.3.7.109	
UE positioning GPS measured results	OP		UE positioning GPS measured results 10.3.7.93	
UE positioning error	OP		UE positioning error 10.3.7.87	Included if UE positioning error occurred

## 10.3.7.100 UE positioning measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE positioning reporting quantity	MP		UE positioning reporting quantity 10.3.7.111	
<i>CHOICE reporting criteria</i>	MP			
>UE positioning reporting criteria			UE positioning reporting criteria 10.3.7.110	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.53	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement
UE positioning OTDOA assistance data	CV- OTDOA		UE positioning OTDOA assistance data 10.3.7.103	
UE positioning GPS assistance data	OP		UE positioning GPS assistance data 10.3.7.90	



Condition	Explanation
OTDOA	This IE is mandatory <u>present</u> if the IE "Positioning method" is set to "OTDOA" or "OTDOA or GPS" <u>and not needed otherwise.</u>

### 10.3.7.101 UE positioning measurement event results

This IE contains the measurement event results that are reported to UTRAN for UE positioning measurements.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE <i>Event ID</i>	MP			
>7a				
>>UE positioning Position estimate info	MP		UE positioning Position estimate info 10.3.7.109	
>7b				
>>UE positioning OTDOA measurement	MP		UE positioning OTDOA measurement 10.3.7.105	
>7c				
>>UE positioning GPS measurement	MP		UE positioning GPS measurement 10.3.7.93	

### 10.3.7.102 Void

### 10.3.7.103 UE positioning OTDOA assistance data

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UE positioning OTDOA reference cell info	OP		UE positioning OTDOA reference cell info 10.3.7.108	
UE positioning OTDOA neighbour cell list	OP	1 to <maxCellMEAs>		
>UE positioning OTDOA neighbour cell info	MP		UE positioning OTDOA neighbour cell info 10.3.7.106	

### 10.3.7.104 Void

## 10.3.7.105 UE positioning OTDOA measurement

The purpose of the OTDOA Measurement Information element is to provide OTDOA measurements of signals sent from the reference and neighbour cells.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SFN	MP		Integer(0..4095)	SFN during which the last measurement was performed
CHOICE <i>mode</i>				
>FDD				
>>Reference cell id	MP		Primary CPICH info 10.3.6.60	
>>>UE Rx-Tx time difference type 2	MP		UE Rx-Tx time difference type 2 10.3.7.84	
>TDD				(no data)
>>Reference cell id	MP		Cell parameters ID 10.3.6.9	
Neighbours	MP	0 to <maxCellMEas>		
>CHOICE <i>mode</i>	MP			
>>FDD				
>>>Neighbour Identity	MD		Primary CPICH info 10.3.6.60	Default value is the same as in the first set of multiple sets.
>>>>UE Rx-Tx time difference type 2	OP		UE Rx-Tx time difference type 2 10.3.7.84	Included if the neighbour is in the active set
>>TDD				
>>>>Cell and Channel ID	MD		Cell and Channel Identity info 10.3.6.8a	Default value is the same as in the first set of multiple sets.
>UE positioning OTDOA quality	MP		UE positioning OTDOA quality 10.3.7.107	Quality of the measurement from the neighbour cell.
>SFN-SFN observed time difference type 2	MP		SFN-SFN observed time difference 10.3.7.63	Gives the timing relative to the reference cell. Only type 2 is allowed.

## 10.3.7.106 UE positioning OTDOA neighbour cell info

This IE gives approximate cell timing in order to decrease the search window, as well as the cell locations and fine cell timing for UE based OTDOA.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>cell and channel ID	MP		Cell and Channel Identity info 10.3.6.8a	Identifies the channel to be measured on.
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information
IPDL parameters	CV-IPDLs		UE positioning IPDL parameters 10.3.7.98	
SFN offset	CV-IPDLs		Integer (0 .. 4095)	Define Tref as the time of beginning of system frame number SFNref of the reference cell. Define Tnc as the beginning of a frame from the neighbour cell occurring immediately after the time Tref. Let the corresponding system frame number be SFNnc. Then SFNnc = SFNref-SFN offset modulo 4096.
SFN-SFN relative time difference	MP		Integer(0.. 38399)	Gives the relative timing compared to the reference cell Equal to $\lfloor (Tnc-Tref)/(3.84 \cdot 10^6) \rfloor$ where $\lfloor () \rfloor$ denotes rounding to the nearest lower integer. in chips.
SFN-SFN drift	OP		Real(0,+0.33,+0.66,+1,+1.33,+1.66,+2,+2.5,+3,+4,+5,+7,+9,+11,+13,+15,-0.33,-0.66,-1,-1.33,-1.66,-2,-2.5,-3,-4,-5,-7,-9,-11,-13,-15)	meters/sec
Search Window Size	MP		Integer(20, 40, 80, 160, 320, 640, 1280, infinity)	in chips. If the value is X then the expected SFN-SFN observed time difference is in the range [RTD-X, RTD+X] where RTD is the value of the field SFN-SFN relative time difference. Infinity means that the uncertainty is larger than 1280 chips.
CHOICE <i>PositioningMode</i>	MP			
>UE based				
>>Cell Position	MD			Default is the same as previous cell
>>>Relative North	OP		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference cell.

>>>Relative East	OP		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference cell.
>>>Relative Altitude	OP		Integer(-4000..4000)	Relative altitude in meters compared to ref. cell.
>>Fine SFN-SFN	MP		Real(0..0.9375 in steps of 0.0625)	Gives finer resolution
>>Round Trip Time	OP		Real(876.00 .. 2923.875) in steps of 0.0625	In chips. Included if cell is in active set.
>UE assisted				(no data)

Condition	Explanation
IPDLs	This IE is <u>mandatory</u> present <u>only</u> if IPDLs are applied and <u>not needed</u> otherwise.

10.3.7.107 UE positioning OTDOA quality

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Std Resolution	MP		Bit string(2)	Std Resolution field includes the resolution used in Std of OTDOA Measurements field. Encoding on two bits as follows: '00' 10 meters '01' 20 meters '10' 30 meters '11' Reserved
Number of OTDOA Measurements	MP		Bit string(3)	Number of measurements field is used together with Std of OTDOA Measurements field to define quality of a reported OTDOA measurement. The field indicates how many OTDOA measurements have been used in the UE to define the standard deviation of the measurements. Following 3 bit encoding is used: '000' 0-4 '001' 5-9 '010' 10-14 '011' 15-24 '100' 25-34 '101' 35-44 '110' 45-54 '111' 55 or more
Std of OTDOA Measurements	MP		Bit string(5)	Std of OTDOA Measurements field includes standard deviation of OTDOA measurements. Following linear 5 bit encoding is used: '00000' 0 - (R*1-1) meters '00001' R*1 – (R*2-1) meters '00010' R*2 – (R*3-1) meters ... '11111' R*31 meters or more where R is the resolution defined by Std Resolution field. E.g. R=20 m corresponds to 0-19 m, 20-39 m,...,620+ m.

## 10.3.7.108 UE positioning OTDOA reference cell info

This IE defines the cell used for time references in all OTDOA measurements.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SFN	OP		Integer (0..4095)	Time stamp (SFN of Reference Cell) of the SFN-SFN relative time differences and SFN-SFN drift rates. Included if any SFN-SFN drift value is included in IE UE positioning OTDOA neighbour cell info.
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	
>TDD				
>>cell and channel ID	MP		Cell and Channel Identity info 10.3.6.8a	Identifies the channel to be measured on.
Frequency info	MD		Frequency info 10.3.6.36	Default value is the existing value of frequency information.
CHOICE <i>PositioningMode</i>	MP			
>UE based				
>>CHOICE <i>Cell Position</i>	OP			The position of the antenna that defines the cell. Used for the UE based method.
>>>Ellipsoid				
>>>>Ellipsoid point	MP		Ellipsoid point 10.3.8.4a	
>>>Ellipsoid with altitude				
>>>>Ellipsoid point with altitude	MP		Ellipsoid point with altitude 10.3.8.4b	
>>Round Trip Time	OP		Real(876.00 .. 2923.875) in steps of 0.0625	In chips.
>UE assisted				(no data)
IPDL parameters	OP		UE positioning IPDL parameters 10.3.7.98	If this element is not included there are no idle periods present

## 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 <i>mode</i>				
>FDD				
>>Primary CPICH Info	OP		Primary CPICH Info 10.3.6.60	Identifies the reference cell for the GPS TOW-SFN relationship
>TDD				
>>cell parameters id	OP		Cell parameters id 10.3.6.9	Identifies the reference cell for the GPS TOW-SFN relationship
Reference SFN	MP		Integer(0..4095)	The SFN for which the location is valid
GPS TOW msec	CV- <i>Capability and request</i>		Integer(0..6.048*10 <sup>8</sup> -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- <i>Capability and request</i>		Integer(0..999)	GPS Time of Week in microseconds MOD 1000.
CHOICE <i>Position estimate</i>	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
<i>Capability and request</i>	This field is <u>mandatory present</u> <del>included only</del> if the UE has this capability <i>and</i> if it was requested in the UE positioning reporting quantity and if the method was UE-based GPS <u>and not needed otherwise</u>

10.3.7.110 UE positioning reporting criteria

The triggering of the event-triggered reporting for an UE positioning measurement.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Parameters required for each event	OP	1 to <maxMeas Event>		
>Amount of reporting	MP		Integer(1, 2, 4, 8, 16, 32, 64,infinite)	
>Report first fix	MP		Boolean	If true the UE reports the position once the measurement control is received, and then each time an event is triggered.
>Measurement interval	MP		Integer(5,15, 60,300,900,1 800,3600,72 00)	Indicates how often the UE should make the measurement In seconds
>CHOICE <i>Event ID</i>	MP			
>>7a				
>>>Threshold Position Change	MP		Integer(10,2 0,30,40,50,1 00,200,300,5 00,1000,200 0,5000,1000 0,20000,500 00,100000)	Indicated how much the position should change compared to last reported position fix in order to trigger the event.
>>7b				
>>>Threshold SFN-SFN change	MP		Real(0.25,0. 5,1,2,3,4,5,1 0,20,50,100, 200,500,100 0,2000,5000 )	Chips. Indicates how much the SFN-SFN measurement of ANY measured cell is allowed to change before the event is triggered.
>>7c				
>>>Threshold SFN-GPS TOW	MP		Integer(1,2,3 ,5,10,20,50,1 00)	Time in ms. When the GPS TOW and SFN timer has drifted apart more than the specified value the event is triggered)

### 10.3.7.111 UE positioning reporting quantity

The purpose of the element is to express the allowed/required location method(s), and to provide information required QoS.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Method Type	MP		Enumerated(UE assisted, UE based, UE based is preferred but UE assisted is allowed, UE assisted is preferred but UE based is allowed)	
Positioning Methods	MP		Enumerated(OTDOA, GPS, OTDOA or GPS)	
Response Time	MP		Integer(1,2,4, 8, 16, 32, 64, 128)	in seconds
Accuracy	CV- MethodType		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 <i>OTDOA/GPS Measurement Information Sets</i> . 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
<i>Method Type</i>	The IE is optional if the IE "Method Type" is 'UE assisted'; otherwise it is mandatory <u>present</u>

10.3.7.112 UpPCH<sub>ADV</sub>

NOTE: Only for 1.28Mcps TDD.



UpPCH<sub>ADV</sub> indicates the difference between the Rx timing and initial Tx timing of a UE.

Information Element/group name	Need	Multi	Type and reference	Semantics description	Version
UpPCH <sub>ADV</sub>	MP		Integer (0..352)	In chips	REL-4

## 10.3.8 Other Information elements

### 10.3.8.1 BCCH modification info

Indicates modification of the System Information on BCCH.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB Value tag	MP		MIB Value tag 10.3.8.9	
BCCH modification time	OP		Integer (0..4088 in step of 8)	All SFN values in which MIB may be mapped are allowed.

### 10.3.8.2 BSIC

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Base transceiver Station Identity Code (BSIC)	MP			[11]
>Network Colour Code (NCC)	MP		bit string(3)	
>Base Station Colour Code (BCC)	MP		bit string(3)	

### 10.3.8.3 CBS DRX Level 1 information

This information element contains the CBS discontinuous reception information to be broadcast for CBS DRX Level 1 calculations in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Period of CTCH allocation (N)	MP		Integer (1..256)	$M_{TTI} \leq N \leq 4096 - K$ , N multiple of $M_{TTI}$
CBS frame offset (K)	MP		Integer (0..255)	$0 \leq K \leq N-1$ , K multiple of $M_{TTI}$

### 10.3.8.4 Cell Value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell Value tag	MP		Integer (1..4)	

### 10.3.8.4a Ellipsoid point

This IE contains the description of an ellipsoid point as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)

#### 10.3.8.4b Ellipsoid point with Altitude

This IE contains the description of an ellipsoid point with altitude as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)
Altitude Direction	MP		Enumerated (Height, Depth)	
Altitude	MP		Integer (0..2 <sup>15</sup> -1)	The IE value (N) is derived by this formula: $N \leq a < N+1$ a being the altitude in metres

#### 10.3.8.4c Ellipsoid point with Altitude and uncertainty ellipsoid

This IE contains the description of an ellipsoid point with altitude and uncertainty ellipsoid as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)
Altitude Direction	MP		Enumerated (Height, Depth)	
Altitude	MP		Integer (0..2 <sup>15</sup> -1)	The IE value (N) is derived by this formula: $N \leq a < N+1$ a being the altitude in metres
Uncertainty semi-major	MP		Integer (0...127)	The uncertainty r is derived from the "uncertainty code" k by $r = 10x(1.1^k - 1)$
Uncertainty semi-minor	MP		Integer (0...127)	The uncertainty r is derived from the "uncertainty code" k by $r = 10x(1.1^k - 1)$
Orientation of major axis	MP		Integer (0..179 by step of 2)	The IE value (N) is derived by this formula: $N \leq a / 2 < N+1$ a being the orientation in degree (0°.. 360°)
Uncertainty Altitude	MP		Integer(0..127)	The uncertainty in altitude, h, expressed in metres is mapped from the IE value (K), with the following formula: $h = C \left( (1 + x)^K - 1 \right)$ with C = 45 and x = 0.025.
Confidence	MP		Integer (0..100)	in percentage

#### 10.3.8.4d Ellipsoid point with uncertainty Circle

This IE contains the description of an ellipsoid point with an uncertainty circle as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)
Uncertainty Code	MP		Integer (0...127)	The uncertainty r is derived from the "uncertainty code" k by $r = 10x(1.1^k - 1)$

10.3.8.4e Ellipsoid point with uncertainty Ellipse

This IE contains the description of an ellipsoid point with an uncertainty ellipse as in [24].

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Latitude sign	MP		Enumerated (North, South)	
Degrees Of Latitude	MP		Integer (0...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{23} X / 90 < N+1$ X being the latitude in degree (0°.. 90°)
Degrees Of Longitude	MP		Integer (-2 <sup>23</sup> ...2 <sup>23</sup> -1)	The IE value (N) is derived by this formula: $N \leq 2^{24} X / 360 < N+1$ X being the longitude in degree (-180°..+180°)
Uncertainty semi-major	MP		Integer (0...127)	The uncertainty r is derived from the "uncertainty code" k by $r = 10x(1.1^k - 1)$
Uncertainty semi-minor	MP		Integer (0...127)	The uncertainty r is derived from the "uncertainty code" k by $r = 10x(1.1^k - 1)$
Orientation of major axis	MP		Integer (0..179 by step of 2)	The IE value (N) is derived by this formula: $N \leq a / 2 < N+1$ a being the orientation in degree (0°.. 360°)
Confidence	MP		Integer (0..100)	in percentage

10.3.8.5 Inter-RAT change failure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT change failure cause	MP		Enumerated(C onfiguration unacceptable, physical)	At least 3 spare values, criticality = default, are required

			channel failure, protocol error)	
Protocol error information	CV-ProtErr		Protocol error information 10.3.8.12	

Condition	Explanation
ProtErr	The IE is mandatory present if the IE "Inter-RAT handover failure cause" has the value "Protocol error" and not needed otherwise

### 10.3.8.6 Inter-RAT handover failure

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT handover failure cause	MD		Enumerated(C onfiguration unacceptable, physical channel failure, protocol error, inter-RAT protocol error, unspecified)	Default value is "unspecified". At least one spare value needed
Protocol error information	CV-ProtErr		Protocol error information 10.3.8.12	

Condition	Explanation
ProtErr	The IE is mandatory present if the IE "Inter-RAT handover failure cause" has the value "Protocol error" and not needed otherwise

### 10.3.8.7 Inter-RAT UE radio access capability

This Information Element contains the inter-RAT UE radio access capability that is structured and coded according to the specification used for the corresponding system type.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>system</i>	MP			
>GSM				
>>Mobile Station Classmark 2	MP		Octet string (5)	Defined in [5]
>>>Mobile Station Classmark 3	MP		Octet string (1..32)	Defined in [5]
>cdma2000				
>>cdma2000Message	MP	1.to.<maxl nterSysMe ssages>		
>>>MSG_TYPE(s)	MP		Bitstring (8)	Formatted and coded according to cdma2000 specifications
>>>cdma2000Messagepayload(s)	MP		Bitstring (1..512)	Formatted and coded according to cdma2000 specifications

### 10.3.8.8 Void

## 10.3.8.8a Inter-RAT UE security capability

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>system</i>	MP			
>GSM				
>>GSM security capability	MP			The value TRUE means that the indicated ciphering algorithm is supported.
>>>A5/7 supported	MP		Boolean	
>>>A5/6 supported	MP		Boolean	
>>>A5/5 supported	MP		Boolean	
>>>A5/4 supported	MP		Boolean	
>>>A5/3 supported	MP		Boolean	
>>>A5/2 supported	MP		Boolean	
>>>A5/1 supported	MP		Boolean	

## 10.3.8.9 MIB Value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB Value tag	MP		Integer (1..8)	

## 10.3.8.10 PLMN Value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN Value tag	MP		Integer (1..256)	

## 10.3.8.10a PNBSCH allocation

UTRAN may use this IE to provide silent periods in the cell that may be used for cell synchronisation purposes.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Number of repetitions per SFN period	MP		Integer(2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 24, 28, 32, 36, 40, 48, 56, 64, 72, 80)		REL-4

## 10.3.8.11 Predefined configuration identity and value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5	
Predefined configuration value tag	MP		Predefined configuration value tag 10.3.4.6	

### 10.3.8.12 Protocol error information

This information element contains diagnostics information returned by the receiver of a message that was not completely understood.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>diagnostics type</i>	MP			At least one spare choice is needed.
>Protocol error cause			Protocol error cause 10.3.3.26	

### 10.3.8.13 References to other system information blocks

Information element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP	1 to <maxSIB>		System information blocks for which multiple occurrences are used, may appear more than once in this list
>Scheduling information	MP		Scheduling information, 10.3.8.16	
>SIB type SIBs only	MP		SIB Type SIBs only, 10.3.8.22	

### 10.3.8.14 References to other system information blocks and scheduling blocks

Information element/Group name	Need	Multi	Type and reference	Semantics description
References to other system information blocks	MP	1 to <maxSIB>		System information blocks for which multiple occurrences are used, may appear more than once in this list
>Scheduling information	MP		Scheduling information, 10.3.8.16	
>SIB type	MP		SIB Type, 10.3.8.21	

### 10.3.8.15 Rplmn information

Contains information to provide faster RPLMN selection in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
GSM BA Range	OP	1 to maxNumGSMFreqRanges		GSM BA Range	
>GSM Lower Range (UARFCN)	MP		Integer(0..16383)	Lower bound for range of GSM BA freqs	
>GSM Upper Range (UARFCN)	MP		Integer(0..16383)	Upper bound for range of GSM BA freqs	
FDD UMTS Frequency list	OP	1 to maxNumFDDFreqs			
>UARFCN (Nlow)	MP		Integer(0..16383)	[21]	
>UARFCN (Nupper)	OP		Integer(0..16383)	[21] This IE is only needed when the FDD frequency list is specifying a range.	
3.84 Mcps TDD UMTS Frequency list	OP	1 to maxNumTDDFreqs			
>UARFCN	MP		Integer(0..16383)	[22]	
1.28 Mcps TDD UMTS Frequency list	OP	1 to maxNumTDDFreqs			REL-4
>UARFCN	MP		Integer(0..16383)	[22]	REL-4
CDMA2000 UMTS Frequency list	OP	1 to maxNumCDMA2000Freqs			
>BAND_CLASS	MP		Bitstring(5 bits)	TIA/EIA/IS-2000 The BAND_CLASS bits are numbered b0 to b4, where b0 is the least significant bit.	
>CDMA_FREQ	MP		Bitstring (11 bits)	TIA/EIA/IS-2000 The CDMA_FREQ bits are numbered b0 to b10, where b0 is the least significant bit.	



10.3.8.16 Scheduling information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>Value tag</i> >PLMN Value tag	OP		PLMN Value tag 10.3.8.10	This IE is included if the following conditions are fulfilled: the area scope for the system information block is set to "PLMN" in table 8.1.1. a value tag is used to indicate changes in the system information block. the SIB type does not equal system information block type 16
>Predefined configuration identity and value tag			Predefined configuration identity and value tag 10.3.8.11	This IE is included if the following conditions are fulfilled: the SIB type equals system information block type 16
>Cell Value tag			Cell Value tag 10.3.8.4	This IE is included if the following conditions are fulfilled: the area scope for the system information block is set to "cell" in table 8.1.1. a value tag is used to indicate changes in the system information block.
>SIB occurrence identity and value tag			SIB occurrence identity and value tag 10.3.8.20b	This IE is included if the following conditions are fulfilled: the SIB type equals system information block types 15.2 and 15.3
Scheduling	MP			
>SEG_COUNT	MD		SEG COUNT 10.3.8.17	Default value is 1
>SIB_REP	MP		Integer (4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096)	Repetition period for the SIB in frames
>SIB_POS	MP		Integer (0 ..Rep-2 by step of 2)	Position of the first segment Rep is the value of the SIB_REP IE
>SIB_POS offset info	MD	1..15		see below for default value
>>SIB_OFF	MP		Integer(2..32 by step of 2)	Offset of subsequent segments

Field	Default value
SIB_POS offset info	The default value is that all segments are consecutive, i.e., that the SIB_OFF = 2 for all segments except when MIB segment/complete MIB is scheduled to be transmitted in between segments from same SIB. In that case, SIB_OFF=4 in between segments which are scheduled to be transmitted at SFNprime = 8 *n-2 and 8*n + 2, and SIB_OFF=2 for the rest of the segments.

## 10.3.8.17 SEG COUNT

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SEG_COUNT	MP		Integer (1..16)	Number of segments in the system information block

## 10.3.8.18 Segment index

Each system information segment has an individual segment index.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Segment index	MP		Integer (1..15)	Segments of a system information block are numbered starting with 0 for the first segment and 1 for the next segment, which can be the first subsequent segment or a last segment.

## 10.3.8.19 SIB data fixed

Contains the result of a master information block or a system information block after encoding and segmentation. The IE is used for segments with fixed length (segments filling an entire transport block).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB data fixed	MP		Bit string (222)	The first bit contains the first bit of the segment.

## 10.3.8.20 SIB data variable

Contains either a complete system information block or a segment of a system information block. Contains the result of a master information block or a system information block after encoding and segmentation. The IE is used for segments with variable length. The system information blocks are defined in clauses 10.2.48.8.1 to 10.2.48.8.18.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB data variable	MP		Bit string (1..214)	The first bit contains the first bit of the segment.

## 10.3.8.20a SIB occurrence identity

This information element identifies a SIB occurrence for System Information Block types 15.2 and 15.3. For System Information Block type 15.2, this identity is assigned to the visible satellite only. Unused identities are claimed by newly rising satellites.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB occurrence identity	MP		Integer (0..15)	

## 10.3.8.20b SIB occurrence identity and value tag

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB occurrence identity	MP		SIB occurrence identity 10.3.8.20a	
SIB occurrence value tag	MP		SIB occurrence value tag 10.3.8.20c	

## 10.3.8.20c SIB occurrence value tag

This information element is used to identify different versions of SIB occurrence for System Information Block types 15.2 and 15.3.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
SIB occurrence value tag	MP		Integer(0..15)	

## 10.3.8.21 SIB type

The SIB type identifies a specific system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB type	MP		Enumerated, see below	

The list of values to encode is:

- Master information block,
- System Information Type 1,
- System Information Type 2,
- System Information Type 3,
- System Information Type 4,
- System Information Type 5,
- System Information Type 6,
- System Information Type 7,
- System Information Type 8,
- System Information Type 9,
- System Information Type 10,
- System Information Type 11,
- System Information Type 12,
- System Information Type 13,
- System Information Type 13.1,

- System Information Type 13.2,
- System Information Type 13.3,
- System Information Type 13.4,
- System Information Type 14,
- System Information Type 15,
- System Information Type 15.1,
- System Information Type 15.2,
- System Information Type 15.3,
- System Information Type 15.4,
- System Information Type 16,
- System Information Type 17,
- System Information Type 18,
- Scheduling Block 1,
- Scheduling Block 2.

In addition, at least one spare value, criticality: ignore, is needed.

### 10.3.8.22 SIB type SIBs only

The SIB type identifies a specific system information block.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SIB type SIBs only	MP		Enumerated, see below	

The list of values to encode is:

- System Information Type 1,
- System Information Type 2,
- System Information Type 3,
- System Information Type 4,
- System Information Type 5,
- System Information Type 6,
- System Information Type 7,
- System Information Type 8,
- System Information Type 9,
- System Information Type 10,
- System Information Type 11,
- System Information Type 12,
- System Information Type 13,

System Information Type 13.1,  
 System Information Type 13.2,  
 System Information Type 13.3,  
 System Information Type 13.4,  
 System Information Type 14,  
 System Information Type 15,  
 System Information Type 15.1,  
 System Information Type 15.2,  
 System Information Type 15.3,  
 System Information Type 15.4,  
 System Information Type 16,  
 System Information Type 17,  
 System Information Type 18.

In addition, at least one spare value, criticality: ignore, is needed.

## 10.3.9 ANSI-41 Information elements

### 10.3.9.1 ANSI 41 Core Network Information

Information element/Group name	Need	Multi	Type and reference	Semantics description
P_REV	MP		P_REV 10.3.9.10	
MIN_P_REV	MP		MIN_P_REV 10.3.9.8	
SID	MP		SID 10.3.9.11	
NID	MP		NID 10.3.9.9	

### 10.3.9.2 ANSI-41 Global Service Redirection information

This Information Element contains ANSI-41 Global Service Redirection information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 Global Service Redirection information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

### 10.3.9.3 ANSI-41 NAS parameter

This Information Element contains ANSI-41 User Zone Identification information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 NAS parameter	MP		Bit string (size (1..2048))	The first bit contains the first bit of the ANSI-41 information.

#### 10.3.9.4 ANSI-41 NAS system information

This Information Element contains ANSI-41 system information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
NAS (ANSI-41) system information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

#### 10.3.9.5 ANSI-41 Private Neighbour List information

This Information Element contains ANSI-41 Private Neighbour List information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 Private Neighbour List information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

#### 10.3.9.6 ANSI-41 RAND information

This Information Element contains ANSI-41 RAND information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 RAND information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

#### 10.3.9.7 ANSI-41 User Zone Identification information

This Information Element contains ANSI-41 User Zone Identification information.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
ANSI-41 User Zone Identification information	MP		ANSI-41 NAS parameter, 10.3.9.3	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

#### 10.3.9.8 MIN\_P\_REV

This Information Element contains minimum protocol revision level.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIN_P_REV	MP		Bitstring (8)	Minimum protocol revision level. The MIN_P_REV bits are numbered b0 to b7, where b0 is the least significant bit.

#### 10.3.9.9 NID

This Information Element contains Network identification.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
NID	MP		Bitstring (16)	Network identification. The NID bits are numbered b0 to b15, where b0 is the least significant bit.

### 10.3.9.10 P\_REV

This Information Element contains protocol revision level.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
P_REV	MP		Bitstring (8)	Protocol revision level. The P_REV bits are numbered b0 to b7, where b0 is the least significant bit.

### 10.3.9.11 SID

This Information Element contains System identification.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SID	MP		Bitstring (15)	System identification. The SID bits are numbered b0 to b14, where b0 is the least significant bit.

## 10.3.10 Multiplicity values and type constraint values

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

Constant	Explanation	Value
<b>CN information</b>		
maxCNdomains	Maximum number of CN domains	4
<b>UTRAN mobility information</b>		
maxRAT	Maximum number of Radio Access Technologies	maxOtherRAT + 1
maxOtherRAT	Maximum number of other Radio Access Technologies	15
maxURA	Maximum number of URAs in a cell	8
maxInterSysMessages	Maximum number of Inter System Messages	4
maxRABsetup	Maximum number of RABs to be established	16
<b>UE information</b>		
maxtransactions	Maximum number of parallel RRC transactions in downlink	25
maxPDCPalgoType	Maximum number of PDCP algorithm types	8
maxDRACclasses	Maximum number of UE classes which would require different DRAC parameters	8
maxFreqBandsFDD	Maximum number of frequency bands supported by the UE as defined in [21]	8
maxFreqBandsTDD	Maximum number of frequency bands supported by the UE as defined in [22]	4
maxFreqBandsGSM	Maximum number of frequency bands supported by the UE as defined in [45]	16
maxPage1	Number of UEs paged in the Paging Type 1 message	8
maxSystemCapability	Maximum number of system specific capabilities that can be requested in one message.	16
<b>RB information</b>		
maxPredefConfig	Maximum number of predefined configurations	16
maxRB	Maximum number of RBs	32
maxSRBsetup	Maximum number of signalling RBs to be established	8
maxRBperRAB	Maximum number of RBs per RAB	8
maxRBallRABs	Maximum number of non signalling RBs	27
maxRBMuxOptions	Maximum number of RB multiplexing options	8
maxLoCHperRLC	Maximum number of logical channels per RLC entity	2
MaxROHC-PacketSizes	Maximum number of packet sizes that are allowed to be produced by ROHC.	16
MaxROHC-Profiles	Maximum number of profiles supported by ROHC on a given RB.	8
<b>TrCH information</b>		
maxTrCH	Maximum number of transport channels used in one direction (UL or DL)	32
maxTrCHpreconf	Maximum number of preconfigured Transport channels, per direction	16
maxCCTrCH	Maximum number of CCTrCHs	8
maxTF	Maximum number of different transport formats that can be included in the Transport format set for one transport channel	32
maxTF-CPCH	Maximum number of TFs in a CPCH set	16
maxTFC	Maximum number of Transport Format Combinations	1024
maxTFCI-1-Combs	Maximum number of TFCI (field 1) combinations	512
maxTFCI-2-Combs	Maximum number of TFCI (field 2) combinations	512
maxCPCHsets	Maximum number of CPCH sets per cell	16
maxSIBperMsg	Maximum number of complete system information blocks per SYSTEM INFORMATION message	16
maxSIB	Maximum number of references to other system information blocks.	32
maxSIB-FACH	Maximum number of references to system information blocks on the FACH	8
<b>PhyCH information</b>		
maxSubCh	Maximum number of sub-channels on PRACH	12
maxPCPCH-APsubCH	Maximum number of available sub-channels for AP signature on PCPCH	12
maxPCPCH-CDsubCH	Maximum number of available sub-channels for CD signature on PCPCH	12
maxSig	Maximum number of signatures on PRACH	16
maxPCPCH-APsig	Maximum number of available signatures for AP on PCPCH	16
maxPCPCH-CDsig	Maximum number of available signatures for CD on PCPCH	16



maxAC	Maximum number of access classes	16
maxASC	Maximum number of access service classes	8
maxASCmap	Maximum number of access class to access service classes mappings	7
maxASCpersist	Maximum number of access service classes for which persistence scaling factors are specified	6
maxPRACH	Maximum number of PRACHs in a cell	16
MaxPRACH_FPACH	Maximum number of PRACH / FPACH pairs in a cell (1.28 Mcps TDD)	8
maxFACHPCH	Maximum number of FACHs and PCHs mapped onto one secondary CCPCHs	8
maxRL	Maximum number of radio links	8
maxSCCPCH	Maximum number of secondary CCPCHs per cell	16
maxDPDCH-UL	Maximum number of DPDCHs per cell	6
maxDPCH-DLchan	Maximum number of channelisation codes used for DL DPCH	8
maxDPCHcodesPerTS	Maximum number of codes for one timeslots (TDD)	16
maxPUSCH	Maximum number of PUSCHs	(8)
maxPDSCH	Maximum number of PDSCHs	8
maxPDSCHcodes	Maximum number of codes for PDSCH	16
maxPDSCH-TFCIgroups	Maximum number of TFCI groups for PDSCH	256
maxPDSCHcodeGroups	Maximum number of code groups for PDSCH	256
maxPCPCHs	Maximum number of PCPCH channels in a CPCH Set	64
maxPCPCH-SF	Maximum number of available SFs on PCPCH	7
maxTS	Maximum number of timeslots used in one direction (UL or DL)	6 (1.28 Mcps TDD) 14 (3.84 Mcps TDD)
HiPUSCHIdentities	Maximum number of PDSCH Identities	64
HiPDSCHIdentities	Maximum number of PDSCH Identities	64
<b>Measurement information</b>		
maxTGPS	Maximum number of transmission gap pattern sequences	6
maxAdditionalMeas	Maximum number of additional measurements for a given measurement identity	4
maxMeasEvent	Maximum number of events that can be listed in measurement reporting criteria	8
maxMeasParEvent	Maximum number of measurement parameters (e.g. thresholds) per event	2
maxMeasIntervals	Maximum number of intervals that define the mapping function between the measurements for the cell quality Q of a cell and the representing quality value	1
maxCellMeas	Maximum number of cells to measure	32
maxReportedGSMCells	Maximum number of GSM cells to be reported	6
maxFreq	Maximum number of frequencies to measure	8
maxSat	Maximum number of satellites to measure	16
HiRM	Maximum number that could be set as rate matching attribute for a transport channel	256
<b>Frequency information</b>		
maxFDDFreqList	Maximum number of FDD carrier frequencies to be stored in USIM	4
maxTDDFreqList	Maximum number of TDD carrier frequencies to be stored in USIM	4
maxFDDFreqCellList	Maximum number of neighbouring FDD cells to be stored in USIM	32
maxTDDFreqCellList	Maximum number of neighbouring TDD cells to be stored in USIM	32
maxGSMCellList	Maximum number of GSM cells to be stored in USIM	32
<b>Other information</b>		
maxNumGSMFreqRanges	Maximum number of GSM Frequency Ranges to store	32
maxNumFDDFreqs	Maximum number of FDD centre frequencies to store	8
maxNumTDDFreqs	Maximum number of TDD centre frequencies to store	8
maxNumCDMA200Freqs	Maximum number of CDMA2000 centre frequencies to store	8

---

# 11 Message and Information element abstract syntax (with ASN.1)

This clause contains definitions for RRC PDUs and IEs using a subset of ASN.1 as specified in [14]. PDU and IE definitions are grouped into separate ASN.1 modules.

## 11.0 General

Some messages and/ or IEs may include one or more IEs with name “dummy” that are included only in the ASN.1. The UE should avoid sending information elements that are named “dummy” to UTRAN. Likewise, UTRAN should avoid sending IEs with name “dummy” to the UE. If the UE anyhow receives an information element named “dummy”, it shall ignore the IE and process the rest of the message as if the IE was not included.

Note An IE with name “dummy” concerns an information element that was (erroneously) included in a previous version of the specification and has been removed by replacing it with a dummy with same type.

If the abstract syntax of an IE is defined using the ASN.1 type "BIT STRING", and this IE corresponds to a functional IE definition in tabular format, in which the significance of bits is semantically defined, the following general rule shall be applied:

The bits in the ASN.1 bit string shall represent the semantics of the functional IE definition in decreasing order of bit significance;

- with the first (or leftmost) bit in the bit string representing the most significant bit; and
- with the last (or rightmost) bit in the bit string representing the least significant bit.

## CHANGE REQUEST

⌘ **25.331 CR 909** ⌘ rev **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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction to TDD DL DPCH Common Timeslot Info		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 8-26-01
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	<b>R96</b> (Release 1996)	<b>2</b> (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)	<b>R97</b> (Release 1997)	
	<b>B</b> (addition of feature),	<b>R98</b> (Release 1998)	
	<b>C</b> (functional modification of feature)	<b>R99</b> (Release 1999)	
	<b>D</b> (editorial modification)	<b>REL-4</b> (Release 4)	
	Detailed explanations of the above categories can be found in 3GPP <a href="http://www.3gpp.org/Specs/CRs.htm">TR 21.900</a> .	<b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ Timeslot Info (frame repetition, TFCI coding, interleaving mode and puncturing limit) is specified in DL information common for all RL. These physical channel attributes need to be specified individually per DL CCTrCH as is currently specified in the UL.
<b>Summary of change:</b>	⌘ Common Timeslot Information (10.3.6.10) is moved from DL info Common for all RL (10.3.6.18) to per CCTrCH info in DL DPCH info for each RL (10.3.6.21).
<b>Consequences if not approved:</b>	⌘ Each active DL CCTrCH's must have the same frame repetition, TFCI coding, interleaving and puncturing limit.  Isolated Impact Analysis - Corrected functionality: TDD mode signaling for the case of multiple dedicated CCTrCH. Frame repetition, TFCI coding, interleaving mode and puncturing limit are signaled per CCTrCH. This CR affects all implementations supporting multiple dedicated CCTrCH in TDD mode.

<b>Clauses affected:</b>	⌘ 10.3.6.18, 10.3.6.21, 11		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘ 25.331 v4.1.0, CR 910	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### 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](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.

10.3.6.18 Downlink DPCH info common for all RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timing Indication	MP		Enumerated(Initialise, Maintain)	Note 1
CFN-targetSFN frame offset	CV- <i>TimInd</i>		Integer(0..255)	In frame
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	
CHOICE <i>mode</i>	MP			
>FDD				
>>Power offset $P_{Pilot-DPDCH}$	MP		Integer(0..24)	Power offset equals $P_{Pilot} - P_{DPDCH}$ , range 0..6 dB, in steps of 0.25 dB
>>Downlink rate matching restriction information	OP		Downlink rate matching restriction information 10.3.6.31	If this IE is set to "absent", no Transport CH is restricted in TFI.
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	
>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>CHOICE <i>SF</i>	MP			
>>>SF = 256				
>>>>Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>>SF = 128				
>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>>Otherwise				(no data). In ASN.1 choice "Otherwise" is not explicitly available as all values are available, it is implied by the use of any value other than 128 or 256.
>TDD				<u>(no data)</u>
>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info

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

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

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

## 10.3.6.21 Downlink DPCH info for each RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>>DPCH frame offset	MP		Integer(0..381 44 by step of 256)	Offset (in number of chips) between the beginning of the P-CCPCH frame and the beginning of the DPCH frame This is called $\tau_{DPCH,n}$ in [26]
>>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73	
>>>DL channelisation code	MP	1 to <maxDPC H-DLchan>		For the purpose of physical channel mapping [27] the DPCHs are numbered, starting from DPCH number 1, according to the order that they are contained in this IE.
>>>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumbr with "code number" in ASN.1
>>>>Code number	MP		Integer(0..Spreading factor - 1)	
>>>>Scrambling code change	CH-SF/2		Enumerated (code change, no code change)	Indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'.
>>>TPC combination index	MP		TPC combination index 10.3.6.85	
>>>SSDT Cell Identity	OP		SSDT Cell Identity 10.3.6.76	
>>>Closed loop timing adjustment mode	CH-TxDiversity Mode		Integer(1, 2)	It is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Value in slots
>TDD				
>>DL CCTrCh List	MP	1..<maxCC TrCH>		
>>>TFCS ID	MD		Integer(1..8)	Identity of this CCTrCh. Default value is 1
>>>>Time info	MP		Time Info 10.3.6.83	
>>>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info
>>>>Downlink DPCH timeslots and codes	MD		Downlink Timeslots and Codes 10.3.6.32	Default is to use the old timeslots and codes.
>>>>UL CCTrCH TPC List	MD	0..<maxCC TrCH>		UL CCTrCH identities for TPC commands associated

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				with this DL CCTrCH. Default is previous list or all defined UL CCTrCHs
>>>>UL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21	

Condition	Explanation
SF/2	The information element is mandatory if the UE has an active compressed mode pattern sequence, which is using compressed mode method "SF/2". Otherwise the IE is not needed.
TxDiversity Mode	This IE is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Otherwise the IE is not needed.

```

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

DL-DPCH-InfoCommon ::=
    SEQUENCE {
        cfnHandling          CHOICE {
            maintain          NULL,
            initialise        SEQUENCE {
                cfnTargetsfnframeoffset  CfnTargetsfnframeoffset          OPTIONAL
            }
        },
        modeSpecificInfo    CHOICE {
            fdd              SEQUENCE {
                dl-DPCH-PowerControlInfo  DL-DPCH-PowerControlInfo          OPTIONAL,
                powerOffsetPilot-pdpdch   PowerOffsetPilot-pdpdch,
                dl-rate-matching-restriction  Dl-rate-matching-restriction  OPTIONAL,
                spreadingFactorAndPilot    SF512-AndPilot,
                -- TABULAR: The number of pilot bits is nested inside the spreading factor.
                positionFixedOrFlexible    PositionFixedOrFlexible,
                tfci-Existence             BOOLEAN
            },
            tdd              SEQUENCE {
                dl-DPCH-PowerControlInfo  DL-DPCH-PowerControlInfo          OPTIONAL,
                commonTimeslotInfo        CommonTimeslotInfo          OPTIONAL
            }
        }
    }

DL-CCTrCh ::=
    SEQUENCE {
        tfcs-ID              TFCS-IdentityPlain          DEFAULT 1,
        timeInfo             TimeInfo,
        commonTimeslotInfo   CommonTimeslotInfo          OPTIONAL,
        dl-CCTrCH-TimeslotsCodes  DownlinkTimeslotsCodes  OPTIONAL,
        ul-CCTrChTPCList     UL-CCTrChTPCList          OPTIONAL
    }

```

## CHANGE REQUEST

⌘ **25.331 CR 910** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction to TDD DL DPCH Common Timeslot Info		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 8-28-01
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	<b>R96</b> (Release 1996)	<b>2</b> (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)	<b>R97</b> (Release 1997)	
	<b>B</b> (addition of feature),	<b>R98</b> (Release 1998)	
	<b>C</b> (functional modification of feature)	<b>R99</b> (Release 1999)	
	<b>D</b> (editorial modification)	<b>REL-4</b> (Release 4)	
	Detailed explanations of the above categories can be found in 3GPP <a href="http://www.3gpp.org/Specs/CRs.htm">TR 21.900</a> .		<b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ Timeslot Info (frame repetition, TFCI coding, interleaving mode and puncturing limit) is specified in DL information common for all RL. These physical channel attributes need to be specified individually per DL CCTrCH as is currently specified in the UL.
<b>Summary of change:</b>	⌘ Common Timeslot Information (10.3.6.10) is moved from DL info Common for all RL (10.3.6.18) to per CCTrCH info in DL DPCH info for each RL (10.3.6.21).
<b>Consequences if not approved:</b>	⌘ Each active DL CCTrCH's must have the same frame repetition, TFCI coding, interleaving and puncturing limit.  Isolated Impact Analysis - Corrected functionality: TDD mode signaling for the case of multiple dedicated CCTrCH. Frame repetition, TFCI coding, interleaving mode and puncturing limit are signaled per CCTrCH. This CR affects all implementations supporting multiple dedicated CCTrCH in TDD mode.

<b>Clauses affected:</b>	⌘ 10.3.6.18, 10.3.6.21, 11		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘ 25.331 v3.7.0, CR909r1	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### 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](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.

10.3.6.18 Downlink DPCH info common for all RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timing Indication	MP		Enumerated(Initialise, Maintain)	Note 1
CFN-targetSFN frame offset	CV- <i>TimInd</i>		Integer(0..255)	In frame
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23	
<b>CHOICE mode</b>	MP			
>FDD				
>>Power offset $P_{Pilot-DPDCH}$	MP		Integer(0..24)	Power offset equals $P_{Pilot} - P_{DPDCH}$ , range 0..6 dB, in steps of 0.25 dB
>>Downlink rate matching restriction information	OP		Downlink rate matching restriction information 10.3.6.31	If this IE is set to "absent", no Transport CH is restricted in TFI.
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	
>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>>TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
>>CHOICE SF	MP			
>>>SF = 256				
>>>>Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
>>>SF = 128				
>>>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
>>>Otherwise				(no data). In ASN.1 choice "Otherwise" is not explicitly available as all values are available, it is implied by the use of any value other than 128 or 256.
>TDD				<u>(no data)</u>
>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info

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

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

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

## 10.3.6.21 Downlink DPCH info for each RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62	
>>>DPCH frame offset	MP		Integer(0..381 44 by step of 256)	Offset (in number of chips) between the beginning of the P-CCPCH frame and the beginning of the DPCH frame This is called $\tau_{DPCH,n}$ in [26]
>>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73	
>>>DL channelisation code	MP	1 to <maxDPC H-DLchan>		For the purpose of physical channel mapping [27] the DPCHs are numbered, starting from DPCH number 1, according to the order that they are contained in this IE.
>>>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH
>>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumbr with "code number" in ASN.1
>>>>Code number	MP		Integer(0..Spreading factor - 1)	
>>>>Scrambling code change	CH-SF/2		Enumerated (code change, no code change)	Indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'.
>>>TPC combination index	MP		TPC combination index 10.3.6.85	
>>>SSDT Cell Identity	OP		SSDT Cell Identity 10.3.6.76	
>>>Closed loop timing adjustment mode	CH-TxDiversity Mode		Integer(1, 2)	It is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Value in slots
>TDD				
>>DL CCTrCh List	MP	1..<maxCC TrCH>		
>>>TFCS ID	MD		Integer(1..8)	Identity of this CCTrCh. Default value is 1
>>>>Time info	MP		Time Info 10.3.6.83	
>>>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info
>>>>Downlink DPCH timeslots and codes	MD		Downlink Timeslots and Codes 10.3.6.32	Default is to use the old timeslots and codes.
>>>>UL CCTrCH TPC List	MD	0..<maxCC TrCH>		UL CCTrCH identities for TPC commands associated

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				with this DL CCTrCH. Default is previous list or all defined UL CCTrCHs
>>>>UL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21	

Condition	Explanation
SF/2	The information element is mandatory if the UE has an active compressed mode pattern sequence, which is using compressed mode method "SF/2". Otherwise the IE is not needed.
TxDiversity Mode	This IE is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2". Otherwise the IE is not needed.

```

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

DL-DPCH-InfoCommon ::=
    SEQUENCE {
        cfnHandling          CHOICE {
            maintain          NULL,
            initialise        SEQUENCE {
                cfnTargetsfnframeoffset  CfnTargetsfnframeoffset  OPTIONAL
            }
        },
        modeSpecificInfo    CHOICE {
            fdd              SEQUENCE {
                dl-DPCH-PowerControlInfo  DL-DPCH-PowerControlInfo  OPTIONAL,
                powerOffsetPilot-pdpdch   PowerOffsetPilot-pdpdch,
                dl-rate-matching-restriction  Dl-rate-matching-restriction  OPTIONAL,
                spreadingFactorAndPilot    SF512-AndPilot,
                -- TABULAR: The number of pilot bits is nested inside the spreading factor.
                positionFixedOrFlexible   PositionFixedOrFlexible,
                tfci-Existence            BOOLEAN
            },
            tdd              SEQUENCE {
                dl-DPCH-PowerControlInfo  DL-DPCH-PowerControlInfo  OPTIONAL,
                commonTimeslotInfo   CommonTimeslotInfo   OPTIONAL
            }
        }
    }

DL-CCTrCh ::=
    SEQUENCE {
        tfcs-ID              TFCS-IdentityPlain          DEFAULT 1,
        timeInfo             TimeInfo,
        commonTimeslotInfo         CommonTimeslotInfo         OPTIONAL,
        dl-CCTrCH-TimeslotsCodes  DownlinkTimeslotsCodes  OPTIONAL,
        ul-CCTrChTPCList        UL-CCTrChTPCList          OPTIONAL
    }

DL-CCTrCh-r4 ::=
    SEQUENCE {
        tfcs-ID              TFCS-IdentityPlain          DEFAULT 1,
        timeInfo             TimeInfo,
        commonTimeslotInfo         CommonTimeslotInfo         OPTIONAL,
        tddOption            CHOICE {
            tdd384           SEQUENCE {
                dl-CCTrCH-TimeslotsCodes  DownlinkTimeslotsCodes  OPTIONAL
            },
            tdd128           SEQUENCE {
                dl-CCTrCH-TimeslotsCodes  DownlinkTimeslotsCodes-LCR-r4  OPTIONAL
            }
        }
    },

```

```
    ul-CCTrChTPCList          UL-CCTrChTPCList          OPTIONAL  
}
```

## CHANGE REQUEST

⌘ **25.331 CR 911** ⌘ rev **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  Radio Access Network  Core Network

<b>Title:</b>	⌘ TDD system information update in Cell DCH		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 8-26-01
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ In TDD mode when in Cell DCH and shared channels are assigned it is necessary to receive value tag SIB updates for PRACH/RACH and S-CCPCH/FACH information.
<b>Summary of change:</b>	⌘ Reception of BCCH modification info is specified in TDD mode for Cell DCH when S-CCPCH is assigned for shared channel signalling.
<b>Consequences if not approved:</b>	⌘ TDD shared channels will fail when in Cell DCH and common channel information is updated.  Isolated impact analysis: The functionality is Cell DCH update of system information required for support for shared channel signaling in TDD mode. <ul style="list-style-type: none"> <li>• Correction to a function where the specification was :                         <ul style="list-style-type: none"> <li>○ ambiguous or not sufficiently explicit.</li> </ul> </li> </ul> Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

<b>Clauses affected:</b>	⌘ 8.1.1.7.1		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘ 25.331 v4.1.0, CR912	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### 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](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.

#### 8.1.1.7.1 Modification of system information blocks using a value tag

Upon modifications of system information blocks using value tags, UTRAN should notify the new value tag for the master information block in the IE "BCCH modification info", transmitted in the following way:

- to reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;
- to reach UEs in CELL\_FACH state or TDD UE's in CELL\_DCH with S-CCPCH assigned, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" but not containing the IE "BCCH modification time", the UE shall perform actions as specified in subclause 8.1.1.7.3.

If the IE "BCCH modification time" is included the UE shall perform actions as specified in subclause 8.1.1.7.2.



## CHANGE REQUEST

⌘ **25.331 CR 912** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ TDD system information update in Cell DCH		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 8-28-01
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ In TDD mode when in Cell DCH and shared channels are assigned it is necessary to receive value tag SIB updates for PRACH/RACH and S-CCPCH/FACH information.
<b>Summary of change:</b>	⌘ Reception of BCCH modification info is specified in TDD mode for Cell DCH when S-CCPCH is assigned for shared channel signalling.
<b>Consequences if not approved:</b>	⌘ TDD shared channels will fail when in Cell DCH and common channel information is updated.  Isolated impact analysis: The functionality is Cell DCH update of system information required for support for shared channel signaling in TDD mode. <ul style="list-style-type: none"> <li>• Correction to a function where the specification was : <ul style="list-style-type: none"> <li>○ ambiguous or not sufficiently explicit.</li> </ul> </li> </ul> Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

<b>Clauses affected:</b>	⌘ 8.1.1.7.1		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘ 25.331 v3.7.0, CR 911r1	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### 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](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.

#### 8.1.1.7.1 Modification of system information blocks using a value tag

Upon modifications of system information blocks using value tags, UTRAN should notify the new value tag for the master information block in the IE "BCCH modification info", transmitted in the following way:

- to reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;
- to reach UEs in CELL\_FACH state or TDD UE's in CELL\_DCH with S-CCPCH assigned, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" but not containing the IE "BCCH modification time", the UE shall perform actions as specified in subclause 8.1.1.7.3.

If the IE "BCCH modification time" is included the UE shall perform actions as specified in subclause 8.1.1.7.2.

## CHANGE REQUEST

⌘ **25.331 CR 913** ⌘ rev **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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Editorial Corrections		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 8-26-01
<b>Category:</b>	⌘ <b>F</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>Release:</b>	⌘ R99 Use <u>one</u> 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)

<b>Reason for change:</b>	⌘ editorial corrections
<b>Summary of change:</b>	⌘ CTFC description is clarified for TDD mode, and RACH Available Channelisation Codes Indices is modified to indicate the correct bit-string size.
<b>Consequences if not approved:</b>	⌘ Isolated impact analysis: The functionality is the CTFC calculation and available channelisation codes in TDD mode. <ul style="list-style-type: none"><li>• Correction to a function where the specification was :<ul style="list-style-type: none"><li>○ ambiguous or not sufficiently explicit.</li></ul></li></ul> Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise..

<b>Clauses affected:</b>	⌘ 8.6.6.29, 14.10
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ 25.331 v4.1.0, CR 914 <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘

### 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](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.

### 8.6.6.29 ASC setting

If the IE "ASC setting" is included, the UE shall:

- establish the available signatures for this ASC as specified in the following:
  - renumber the list of available signatures specified in the IE "Available signature" included in the IE "PRACH info" from signature index 0 to signature index N-1, where N is the number of available signatures, starting with the lowest available signature number and continuing in sequence, in the order of increasing signature numbers;
  - consider as available signatures for this ASC the signatures included in this renumbered list from the index specified by the IE "Available signature Start Index" to the index specified by the IE "Available signature End Index";
- establish the available access slot sub-channels for this ASC as specified in the following:
  - if the IE "AICH transmission timing" included in the IE "AICH Info" is set to '0':
    - ignore the leftmost (most significant) bit (bit b3) of the bitstring specified by the IE "Assigned Sub-Channel Number";
    - repeat 4 times the 3 rightmost (least significant) bits (bits b2-b0) of the bitstring specified by the IE "Assigned Sub-Channel Number" to form a resulting bitstring 'b2 b1 b0 b2 b1 b0 b2 b1 b0 b2 b1 b0' of length 12 bits, where the leftmost bit is the most significant;
  - if the IE "AICH transmission timing" included in the IE "AICH Info" is set to '1':
    - repeat 3 times the bitstring (bits b3-b0) specified by the IE "Assigned Sub-Channel Number" to form a bitstring 'b3 b2 b1 b0 b3 b2 b1 b0 b3 b2 b1 b0' of length 12 bits, where the leftmost bit is the most significant;
  - perform in both cases, for the resulting bitstring (that includes the repetitions) bit-wise logical AND operation with the IE "Available Sub Channel number" included in IE "PRACH info (for RACH)";
  - consider as available sub-channels for this ASC the available sub-channels indicated in the resulting bitstring, after logical AND operation i.e. each bit set to 1 or 0 indicates availability or non-availability, respectively, of sub-channel number x, with x from 0 to 11, for the respective ASC.

NOTE 1: In FDD, the list of available signatures is renumbered from signature index 0 to signature index N-1, where N is the number of available signatures, starting with the lowest available signature number and continuing in sequence, in the order of increasing signature numbers.

- List of available signatures: 16 or fewer signatures are available.
- Example: only signatures 0, 5, 10 and 15 are available, then :
  - Signature 0 is: available signature index 0
  - Signature 5 is: available signature index 1
  - Signature 10 is: available signature index 2
  - Signature 15 is: available signature index 3

NOTE 2: In TDD, the list of available channelisation codes (defined in PRACH info) is renumbered from channelisation code index 0 to channelisation code index N-1, where N is the number of available channelisation codes, starting with the lowest available channelisation code number and continuing in sequence, in the order of increasing channelisation code numbers

List of available channelisation codes : 8 or less channelisation codes are available.

The i-th bit of the bitmap defined in the IE "Available Channelisation Code indices" defines whether the channelisation code with the available channelisation code index i is to be used for this ASC (bit set means used, bit unset means not used). Only the low N bits shall be used in the bitmap, where N is the number of available channelisation codes defined in PRACH info.

Ex : spreading factor 16, channelisation codes 16/1, 16/2, 16/5, 16/10 are available :

Channelisation code 16/1 is: available channelisation code index 0  
 Channelisation code 16/2 is: available channelisation code index 1  
 Channelisation code 16/5 is: available channelisation code index 2  
 Channelisation code 16/10 is: available channelisation code index 3

Available Channelisation Code indices has the value '00001100' means: Channelisation Codes 16/5 and 16/10 are available for this ASC.

NOTE 3: In TDD, the subchannel description is found in [33].

## 14.10 Calculated Transport Format Combination

The Calculated Transport Format Combination (CTFC) is a tool for efficient signalling of transport format combinations.

Let  $I$  be the number of transport channels that are included in the transport format combination. Each transport channel  $\text{TrCH}_i$ ,  $i = 1, 2, \dots, I$ , has  $L_i$  transport formats, i.e. the transport format indicator  $\text{TFI}_i$  can take  $L_i$  values,  $\text{TFI}_i \in \{0, 1, 2, \dots, L_i - 1\}$ .

Define  $P_i = \prod_{j=0}^{i-1} L_j$ , where  $i = 1, 2, \dots, I$ , and  $L_0 = 1$ .

Let  $\text{TFC}(\text{TFI}_1, \text{TFI}_2, \dots, \text{TFI}_I)$  be the transport format combination for which  $\text{TrCH}_1$  has transport format  $\text{TFI}_1$ ,  $\text{TrCH}_2$  has transport format  $\text{TFI}_2$ , etc. The corresponding  $\text{CTFC}(\text{TFI}_1, \text{TFI}_2, \dots, \text{TFI}_I)$  is then computed as:

$$\text{CTFC}(\text{TFI}_1, \text{TFI}_2, \dots, \text{TFI}_I) = \sum_{i=1}^I \text{TFI}_i \cdot P_i.$$

For FACH and PCH transport channels, "TrCH<sub>1</sub>" corresponds to the transport channel listed at the first position in IE "FACH/PCH information" in IE "Secondary CCPCH System Information", "TrCH<sub>2</sub>" corresponds to the transport channel listed at the second position in IE "FACH/PCH information" and so on.

For all other transport channels in FDD and for all configured transport channels of the same transport channel type (i.e. DCH, DSCH, USCH) in TDD, "TrCH<sub>1</sub>" corresponds to the transport channel having the lowest transport channel identity in the transport format combination mapped to the TFCI field in FDD, and for all configured transport channels of the transport channel type (i.e. DCH, DSCH, USCH) in TDD. "TrCH<sub>2</sub>" corresponds to the transport channel having the next lowest transport channel identity, and so on.





- 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.

### 8.6.6.29 ASC setting

If the IE "ASC setting" is included, the UE shall:

- establish the available signatures for this ASC as specified in the following:
  - renumber the list of available signatures specified in the IE "Available signature" included in the IE "PRACH info" from signature index 0 to signature index N-1, where N is the number of available signatures, starting with the lowest available signature number and continuing in sequence, in the order of increasing signature numbers;
  - consider as available signatures for this ASC the signatures included in this renumbered list from the index specified by the IE "Available signature Start Index" to the index specified by the IE "Available signature End Index";
- establish the available access slot sub-channels for this ASC as specified in the following:
  - if the IE "AICH transmission timing" included in the IE "AICH Info" is set to '0':
    - ignore the leftmost (most significant) bit (bit b3) of the bitstring specified by the IE "Assigned Sub-Channel Number";
    - repeat 4 times the 3 rightmost (least significant) bits (bits b2-b0) of the bitstring specified by the IE "Assigned Sub-Channel Number" to form a resulting bitstring 'b2 b1 b0 b2 b1 b0 b2 b1 b0 b2 b1 b0' of length 12 bits, where the leftmost bit is the most significant;
  - if the IE "AICH transmission timing" included in the IE "AICH Info" is set to '1':
    - repeat 3 times the bitstring (bits b3-b0) specified by the IE "Assigned Sub-Channel Number" to form a bitstring 'b3 b2 b1 b0 b3 b2 b1 b0 b3 b2 b1 b0' of length 12 bits, where the leftmost bit is the most significant;
  - perform in both cases, for the resulting bitstring (that includes the repetitions) bit-wise logical AND operation with the IE "Available Sub Channel number" included in IE "PRACH info (for RACH)";
  - consider as available sub-channels for this ASC the available sub-channels indicated in the resulting bitstring, after logical AND operation i.e. each bit set to 1 or 0 indicates availability or non-availability, respectively, of sub-channel number  $x$ , with  $x$  from 0 to 11, for the respective ASC.

NOTE 1: In FDD, the list of available signatures is renumbered from signature index 0 to signature index N-1, where N is the number of available signatures, starting with the lowest available signature number and continuing in sequence, in the order of increasing signature numbers.

- List of available signatures: 16 or fewer signatures are available.
- Example: only signatures 0, 5, 10 and 15 are available, then :
  - Signature 0 is: available signature index 0
  - Signature 5 is: available signature index 1
  - Signature 10 is: available signature index 2
  - Signature 15 is: available signature index 3

NOTE 2: In TDD, the list of available channelisation codes (defined in PRACH info) is renumbered from channelisation code index 0 to channelisation code index N-1, where N is the number of available channelisation codes, starting with the lowest available channelisation code number and continuing in sequence, in the order of increasing channelisation code numbers

List of available channelisation codes : 8 or less channelisation codes are available.

The i-th bit of the bitmap defined in the IE "Available Channelisation Code indices" defines whether the channelisation code with the available channelisation code index i is to be used for this ASC (bit set means used, bit unset means not used). Only the low N bits shall be used in the bitmap, where N is the number of available channelisation codes defined in PRACH info.

Ex : spreading factor 16, channelisation codes 16/1, 16/2, 16/5, 16/10 are available :

Channelisation code 16/1 is: available channelisation code index 0  
 Channelisation code 16/2 is: available channelisation code index 1  
 Channelisation code 16/5 is: available channelisation code index 2  
 Channelisation code 16/10 is: available channelisation code index 3

Available Channelisation Code indices has the value '00001100' means: Channelisation Codes 16/5 and 16/10 are available for this ASC.

NOTE 3: In TDD, the subchannel description is found in [33].

## 14.10 Calculated Transport Format Combination

The Calculated Transport Format Combination (CTFC) is a tool for efficient signalling of transport format combinations.

Let  $I$  be the number of transport channels that are included in the transport format combination. Each transport channel  $\text{TrCH}_i$ ,  $i = 1, 2, \dots, I$ , has  $L_i$  transport formats, i.e. the transport format indicator  $\text{TFI}_i$  can take  $L_i$  values,

$\text{TFI}_i \in \{0, 1, 2, \dots, L_i - 1\}$ .

Define  $P_i = \prod_{j=0}^{i-1} L_j$ , where  $i = 1, 2, \dots, I$ , and  $L_0 = 1$ .

Let  $\text{TFC}(\text{TFI}_1, \text{TFI}_2, \dots, \text{TFI}_I)$  be the transport format combination for which  $\text{TrCH}_1$  has transport format  $\text{TFI}_1$ ,  $\text{TrCH}_2$  has transport format  $\text{TFI}_2$ , etc. The corresponding  $\text{CTFC}(\text{TFI}_1, \text{TFI}_2, \dots, \text{TFI}_I)$  is then computed as:

$$\text{CTFC}(\text{TFI}_1, \text{TFI}_2, \dots, \text{TFI}_I) = \sum_{i=1}^I \text{TFI}_i \cdot P_i.$$

For FACH and PCH transport channels, " $\text{TrCH}_1$ " corresponds to the transport channel listed at the first position in IE "FACH/PCH information" in IE "Secondary CCPCH System Information", " $\text{TrCH}_2$ " corresponds to the transport channel listed at the second position in IE "FACH/PCH information" and so on.

For all other transport channels in FDD and for all configured transport channels of the transport channel type (i.e. DCH, DSCH, USCH) in TDD, " $\text{TrCH}_1$ " corresponds to the transport channel having the lowest transport channel identity in the transport format combination mapped to the TFCI field in FDD, and for all configured transport channels of the transport channel type (i.e. DCH, DSCH, USCH) in TDD. " $\text{TrCH}_2$ " corresponds to the transport channel having the next lowest transport channel identity, and so on.

## CHANGE REQUEST

⌘ **25.331 CR 915** ⌘ rev **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  Radio Access Network  Core Network

<b>Title:</b>	⌘ UL DPCH Power Control Info in TDD		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 8-26-01
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="http://www.3gpp.org/Specs/CRs.htm">TR 21.900</a> .		<i>Use <u>one</u> of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ <ol style="list-style-type: none"> <li>1. The UL Physical Channel Control procedure may be used to provide UL timeslot interference on DCCH. In this case the SIR Target should not be mandatory.</li> <li>2. The SIR Target may differ significantly for individual CCTrCH's. Therefore in UL DPCH Info this needs to be specified by CCTrCH.</li> </ol>
<b>Summary of change:</b>	⌘ In UL DPCH Power Control Info SIR Target is now optional In Uplink DPCH Info SIR Target is added to the CCTrCH list
<b>Consequences if not approved:</b>	⌘ When DCCH is used to provide UL ISCP for UE Tx power calculation considerable signalling overhead is introduced with unnecessary specification of SIR Target.  When more then one UL CCTrCH exists the UE may apply inappropriate UL power.  Isolated Impact Analysis - Corrected functionality: TDD mode signaling for UL OL PC and CCTrCH establishment. SIR Target is signaled per CCTrCH and is optional in the UL physical channel control procedure. This CR affects all implementations supporting multiple UL CCTrCH in TDD mode.

<b>Clauses affected:</b>	⌘ 10.3.6.88, 10.3.6.91, 11.3		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications ⌘ <input type="checkbox"/> O&M Specifications	⌘ 25.331 v4.1.0, CR 916	
<b>Other comments:</b>	⌘		

**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](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.

## 10.3.6.88 Uplink DPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info 10.3.6.91	
CHOICE mode	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>>Scrambling code number	MP		Integer(0..16777215)	
>>>Number of DPDCH	MD		Integer(2..maxDPDCH)	Default value is 1. Number of DPDCH is 1 in HANDOVER TO UTRAN COMMAND
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	Minimum allowed SF of the channelisation code for data part
>>>TFCI existence	MD		Boolean	TRUE means existence. Default value is "TRUE"
>>>Number of FBI bits	CH		Integer (1, 2)	In bits. Number of FBI bits is needed if SSdT or FB Mode Transmit Signalling is supported.
>>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				
>>Uplink Timing Advance Control	OP		Uplink Timing Advance Control 10.3.6.96	
>>UL CcTrCH List	MP	1 to <maxCcTrCH>		
>>>TFCS ID	MD		Integer(1..8)	Default value is 1.
>>>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB
>>>>Time info	MP		Time info 10.3.6.83	
>>>>Common timeslot info	MD		Common timeslot info 10.3.6.10	Default is the current Common timeslot info
>>>>Uplink DPCH timeslots and codes	MD		Uplink Timeslots and Codes 10.3.6.94	Default is to use the old timeslots and codes.

Condition	Explanation
Single	This IE is included if IE "Number of DPDCH" is "1"

## 10.3.6.91 Uplink DPCH power control info

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and parameters for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>DPCCH Power offset	MP		Integer(-164,..-6 by step of 2)	In dB
>>>PC Preamble	MP		Integer (0..7)	In number of frames
>>>SRB delay	MP		Integer(0..7)	In number of frames
>>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands
>>>TPC step size	CV- <i>algo</i>		Integer (1, 2)	In dB
>TDD				
>>UL target SIR	<u>OPMP</u>		Real (-11 .. 20 by step of 0.5dB)	In dB
>>>CHOICE <i>UL OL PC info</i>	MP			
>>>>Broadcast UL OL PC info			Null	No data
>>>>Individually Signalled	OP			
>>>>>Individual timeslot interference info	MP	1 to <maxTS>		
>>>>>>Individual timeslot interference	MP		Individual timeslot interference 10.3.6.38	
>>>>>DPCH Constant Value	OP		Constant Value 10.3.6.11	Quality Margin
>>>>>Primary CCPCH Tx Power	OP		Primary CCPCH Tx Power 10.3.6.59	For Pathloss Calculation

Condition	Explanation
<i>algo</i>	The IE is mandatory if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

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

```
UL-CCTrCH ::= SEQUENCE {
  tfcs-ID          TFCS-IdentityPlain          DEFAULT 1,
  ul-TargetSIR    UL-TargetSIR,
  timeInfo         TimeInfo,
  commonTimeslotInfo CommonTimeslotInfo      OPTIONAL,
  ul-CCTrCH-TimeslotsCodes UplinkTimeslotsCodes OPTIONAL
}
```

```
UL-DPCH-PowerControlInfo ::= CHOICE {
  fdd SEQUENCE {
    dpccch-PowerOffset DPCCH-PowerOffset,
    pc-Preamble         PC-Preamble,
    srb-delay           SRB-delay,
    powerControlAlgorithm PowerControlAlgorithm
    -- TABULAR: TPC step size nested inside PowerControlAlgorithm
  },
  tdd SEQUENCE {
    ul-TargetSIR          UL-TargetSIR OPTIONAL,
    ul-OL-PC-Signalling CHOICE {
      broadcast-UL-OL-PC-info NULL,
      handoverGroup SEQUENCE {
        individualTS-InterferenceList IndividualTS-InterferenceList,
```





## CHANGE REQUEST

⌘ **25.331 CR 916** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ UL DPCH Power Control Info in TDD		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 8-28-01
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	<b>R96</b> (Release 1996)	<b>2</b> (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)	<b>R97</b> (Release 1997)	
	<b>B</b> (addition of feature),	<b>R98</b> (Release 1998)	
	<b>C</b> (functional modification of feature)	<b>R99</b> (Release 1999)	
	<b>D</b> (editorial modification)	<b>REL-4</b> (Release 4)	
	Detailed explanations of the above categories can be found in 3GPP <a href="http://www.3gpp.org/Specs/CRs.htm">TR 21.900</a> .		<b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘	<ol style="list-style-type: none"> <li>1. The UL Physical Channel Control procedure may be used to provide UL timeslot interference on DCCH. In this case the SIR Target should not be mandatory.</li> <li>2. The SIR Target may differ significantly for individual CCTrCH's. Therefore in UL DPCH Info this needs to be specified by CCTrCH.</li> </ol>
<b>Summary of change:</b>	⌘	<p>In UL DPCH Power Control Info SIR Target is now optional</p> <p>In Uplink DPCH Info SIR Target is added to the CCTrCH list</p>
<b>Consequences if not approved:</b>	⌘	<p>When DCCH is used to provide UL ISCP for UE Tx power calculation considerable signalling overhead is introduced with unnecessary specification of SIR Target.</p> <p>When more then one UL CCTrCH exists the UE may apply inappropriate UL power.</p> <p>Isolated Impact Analysis - Corrected functionality: TDD mode signaling for UL OL PC and CCTrCH establishment. SIR Target is signaled per CCTrCH and is optional in the UL physical channel control procedure. This CR affects all implementations supporting multiple UL CCTrCH in TDD mode.</p>

<b>Clauses affected:</b>	⌘	10.3.6.88, 10.3.6.91, 11.3
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘	25.331 v3.7.0, CR 0915r1

**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](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.

## 10.3.6.88 Uplink DPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info 10.3.6.91	
CHOICE mode	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>>Scrambling code number	MP		Integer(0..16777215)	
>>>Number of DPDCH	MD		Integer(2..maxDPDCH)	Default value is 1. Number of DPDCH is 1 in HANDOVER TO UTRAN COMMAND
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256)	Minimum allowed SF of the channelisation code for data part
>>>TFCI existence	MD		Boolean	TRUE means existence. Default value is "TRUE"
>>>Number of FBI bits	CH		Integer (1, 2)	In bits. Number of FBI bits is needed if SSdT or FB Mode Transmit Signalling is supported.
>>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				
>>Uplink Timing Advance Control	OP		Uplink Timing Advance Control 10.3.6.96	
>>>UL CcTrCH List	MP	1 to <maxCcTrCH>		
>>>>TFCS ID	MD		Integer(1..8)	Default value is 1.
>>>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB
>>>>Time info	MP		Time info 10.3.6.83	
>>>>Common timeslot info	MD		Common timeslot info 10.3.6.10	Default is the current Common timeslot info
>>>>Uplink DPCH timeslots and codes	MD		Uplink Timeslots and Codes 10.3.6.94	Default is to use the old timeslots and codes.

Condition	Explanation
Single	This IE is included if IE "Number of DPDCH" is "1"

## 10.3.6.91 Uplink DPCH power control info

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and 1.28Mcps TDD and parameters for uplink open loop power control in 3.84Mcps TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE <i>mode</i>	MP				
>FDD					
>>DPCCH Power offset	MP		Integer(-164,..-6 by step of 2)	In dB	
>>>PC Preamble	MP		Integer (0..7)	In number of frames	
>>>SRB delay	MP		Integer(0..7)	In number of frames	
>>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands	
>>>TPC step size	CV- <i>algo</i>		Integer (1, 2)	In dB	
>TDD					
>>UL target SIR	<u>OPMP</u>		Real (-11 .. 20 by step of 0.5dB)	In dB	
>>>CHOICE <i>UL OL PC info</i>	MP				
>>>>Broadcast UL OL PC info			Null	No data	
>>>>Individually Signalled	OP				
>>>>>CHOICE <i>TDD option</i>	MP				REL-4
>>>>>>3.84Mcps TDD					REL-4
>>>>>>Individual timeslot interference info	MP	1 to <maxTS>			
>>>>>>>Individual timeslot interference	MP		Individual timeslot interference 10.3.6.38		
>>>>>>>DPCH Constant Value	OP		Constant Value 10.3.6.11	Quality Margin	
>>>>>>>1.28 Mcps TDD					REL-4
>>>>>>>TPC step size	MP		Integer(1,2,3)		REL-4
>>>>>Primary CCPCH Tx Power	OP		Primary CCPCH Tx Power 10.3.6.59	For Pathloss Calculation	

Condition	Explanation
<i>algo</i>	The IE is mandatory if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

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

```
UL-CCTrCH ::= SEQUENCE {
    tfcs-ID          TFCS-IdentityPlain          DEFAULT 1,
    ul-TargetSIR    UL-TargetSIR,
    timeInfo        TimeInfo,
    commonTimeslotInfo CommonTimeslotInfo      OPTIONAL,
    ul-CCTrCH-TimeslotsCodes UplinkTimeslotsCodes OPTIONAL
}
```

```
UL-CCTrCH-r4 ::= SEQUENCE {
    tfcs-ID          TFCS-IdentityPlain          DEFAULT 1,
    ul-TargetSIR    UL-TargetSIR,
    timeInfo        TimeInfo,
    commonTimeslotInfo CommonTimeslotInfo      OPTIONAL,
    tddOption       CHOICE {
        tdd384
    }
}
```

```

        ul-CCTrCH-TimeslotsCodes          UplinkTimeslotsCodes          OPTIONAL
    },
    tdd128                                SEQUENCE {
        ul-CCTrCH-TimeslotsCodes          UplinkTimeslotsCodes-LCR-r4  OPTIONAL
    }
}

```

```

UL-DPCH-PowerControlInfo ::=          CHOICE {
    fdd                                  SEQUENCE {
        dpcch-PowerOffset                DPCCH-PowerOffset,
        pc-Preamble                       PC-Preamble,
        srb-delay                         SRB-delay,
        powerControlAlgorithm             PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                                  SEQUENCE {
        ul-TargetSIR                      UL-TargetSIR OPTIONAL,
        ul-OL-PC-Signalling          CHOICE {
            broadcast-UL-OL-PC-info    NULL,
            handoverGroup           SEQUENCE {
                individualTS-InterferenceList IndividualTS-InterferenceList,
                dpch-ConstantValue    ConstantValue,
                primaryCCPCH-TX-Power PrimaryCCPCH-TX-Power
            }
        }
    }
}

```

```

UL-DPCH-PowerControlInfo-r4 ::=      CHOICE {
    fdd                                  SEQUENCE {
        dpcch-PowerOffset                DPCCH-PowerOffset,
        pc-Preamble                       PC-Preamble,
        powerControlAlgorithm             PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                                  SEQUENCE {
        ul-TargetSIR                      UL-TargetSIR OPTIONAL,
        ul-OL-PC-Signalling               CHOICE {
            broadcast-UL-OL-PC-info        NULL,
            handoverGroup                  SEQUENCE {
                tddOption                   CHOICE {
                    tdd384                  SEQUENCE {
                        individualTS-InterferenceList IndividualTS-InterferenceList,
                        dpch-ConstantValue    ConstantValue
                    },
                    tdd128                   SEQUENCE {
                        tpc-StepSize          TPC-StepSizeTDD
                    }
                }
            },
            primaryCCPCH-TX-Power          PrimaryCCPCH-TX-Power
        }
    }
}

```

## CHANGE REQUEST

⌘ **25.331 CR 917** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ CN-originated paging in CELL_PCH and URA_PCH state		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 2001-08-29
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ In the paging procedure, subclause 8.1.2.3 indicates that the connected mode UE shall perform a cell update procedure using the cause "paging response" even in case of CN originated paging.  However, this kind of paging response is intended for UTRAN originated paging. In case of a CN originated paging, the MM layer will trigger the establishment of a signalling connection carrying the MM paging response. This establishment will, according to the Initial direct transfer procedure, cause a cell update with cause "uplink data transmission" if the UE is in CELL_PCH or URA_PCH state.  This means that the specification is unclear on which cell update cause to use in this case. It should be enough to state that a cell update procedure using the cause "uplink data transmission" is enough. Whether it is a paging response or not is not relevant for the RRC layer, since the paging response is handled by upper layers on CN originated paging.
<b>Summary of change:</b>	⌘ A modification is made in the paging procedure, subclause 8.1.2.3, so that the UE will <u>not</u> initiate a cell update with cause "paging response" in case of CN originated paging for a connected mode UE in CELL_PCH or URA_PCH state.  <b>Isolated impact analysis:</b>  Corrected functionality: The cause value used in the CELL UPDATE message transmitted after received CN-originated paging in CELL_PCH and URA_PCH states.  Correction to a function where the specification contained some contradictions. Would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected behaviour otherwise. In particular, it will not affect UTRAN implementations which do not assume a specific cause value in the CELL UPDATE message after CN-originated paging.

<b>Consequences if not approved:</b>	⌘	The UE may transmit a cell update with a different cause value that was expected by UTRAN. Possibly an unnecessary cell update procedure is performed, if the upper layers do not initiate a paging response at all.	
<b>Clauses affected:</b>	⌘	8.1.2.3	
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 25.331 v4.1.0, CR 918
<b>Other comments:</b>	⌘		

**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](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.

### 8.1.2.3 Reception of a PAGING TYPE 1 message by the UE

A UE in idle mode, CELL\_PCH state or URA\_PCH state shall receive the paging information for all its monitored paging occasions. For an UE in idle mode, the paging occasions are specified in [4] and depend on the IE "CN domain specific DRX cycle length coefficient", as specified in subclause 8.6.3.1a. For a UE in CELL\_PCH state or URA\_PCH state, the paging occasions depend also on the IE "UTRAN DRX cycle length coefficient" and the IE "RRC State Indicator", as specified in subclauses 8.6.3.2 and 8.6.3.3 respectively.

When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

If the UE is in idle mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- if the IE "Used paging identity" is a CN identity:
  - compare the IE "UE identity" with all of its allocated CN UE identities:
  - if one match is found:
    - indicate reception of paging; and
    - forward the IE "CN domain identity", the IE "UE identity" and the IE "Paging cause" to the upper layers;
- otherwise:
  - ignore that paging record.

If the UE is in connected mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- if the IE "Used paging identity" is a UTRAN identity and if this U-RNTI is the same as the U-RNTI allocated to the UE:
  - if the optional IE "CN originated page to connected mode UE" is included:
    - indicate reception of paging; and
    - forward the IE "CN domain identity", the IE "Paging cause" and the IE "Paging record type identifier" to the upper layers;
  - otherwise:
    - perform a cell update procedure with cause "paging response" as specified in subclause 8.3.1.2; [Note to Hans: changed indentation to B3]
- ignore any other remaining IE "Paging record" that may be present in the message;
- otherwise:
  - ignore that paging record.

If the IE "BCCH modification info" is included, any UE in idle mode, CELL\_PCH or URA\_PCH state shall perform the actions as specified in subclause 8.1.1 in addition to any actions caused by the IE "Paging record" occurrences in the message as specified above.



## CHANGE REQUEST

⌘ **25.331 CR 918** ⌘ 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  Radio Access Network  Core Network

**Title:** ⌘ CN-originated paging in CELL\_PCH and URA\_PCH state

**Source:** ⌘ TSG-RAN WG2

**Work item code:** ⌘ TEI

**Date:** ⌘ 2001-08-29

**Category:** ⌘ **A**

**Release:** ⌘ REL-4

Use one of the following categories:

Use one of the following releases:

**F** (correction)

2 (GSM Phase 2)

**A** (corresponds to a correction in an earlier release)

R96 (Release 1996)

**B** (addition of feature),

R97 (Release 1997)

**C** (functional modification of feature)

R98 (Release 1998)

**D** (editorial modification)

R99 (Release 1999)

Detailed explanations of the above categories can be found in 3GPP [TR 21.900](#).

REL-4 (Release 4)

REL-5 (Release 5)

**Reason for change:** ⌘ In the paging procedure, subclause 8.1.2.3 indicates that the connected mode UE shall perform a cell update procedure using the cause "paging response" even in case of CN originated paging.

However, this kind of paging response is intended for UTRAN originated paging. In case of a CN originated paging, the MM layer will trigger the establishment of a signalling connection carrying the MM paging response. This establishment will, according to the Initial direct transfer procedure, cause a cell update with cause "uplink data transmission" if the UE is in CELL\_PCH or URA\_PCH state.

This means that the specification is unclear on which cell update cause to use in this case. It should be enough to state that a cell update procedure using the cause "uplink data transmission" is enough. Whether it is a paging response or not is not relevant for the RRC layer, since the paging response is handled by upper layers on CN originated paging.

**Summary of change:** ⌘ A modification is made in the paging procedure, subclause 8.1.2.3, so that the UE will not initiate a cell update with cause "paging response" in case of CN originated paging for a connected mode UE in CELL\_PCH or URA\_PCH state.

### Isolated impact analysis:

Corrected functionality: The cause value used in the CELL UPDATE message transmitted after received CN-originated paging in CELL\_PCH and URA\_PCH states.

Correction to a function where the specification contained some contradictions. Would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected behaviour otherwise. In particular, it will not affect UTRAN implementations which do not assume a specific cause value in the CELL UPDATE message after CN-originated paging.

<b>Consequences if not approved:</b>	⌘	The UE may transmit a cell update with a different cause value that was expected by UTRAN. Possibly an unnecessary cell update procedure is performed, if the upper layers do not initiate a paging response at all.	
<b>Clauses affected:</b>	⌘	8.1.2.3	
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 25.331 v3.7.0, CR 917r1
<b>Other comments:</b>	⌘		

**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](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.

### 8.1.2.3 Reception of a PAGING TYPE 1 message by the UE

A UE in idle mode, CELL\_PCH state or URA\_PCH state shall receive the paging information for all its monitored paging occasions. For an UE in idle mode, the paging occasions are specified in [4] and depend on the IE "CN domain specific DRX cycle length coefficient", as specified in subclause 8.6.3.1a. For a UE in CELL\_PCH state or URA\_PCH state, the paging occasions depend also on the IE "UTRAN DRX cycle length coefficient" and the IE "RRC State Indicator", as specified in subclauses 8.6.3.2 and 8.6.3.3 respectively.

When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

If the UE is in idle mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- if the IE "Used paging identity" is a CN identity:
  - compare the IE "UE identity" with all of its allocated CN UE identities:
  - if one match is found:
    - indicate reception of paging; and
    - forward the IE "CN domain identity", the IE "UE identity" and the IE "Paging cause" to the upper layers;
- otherwise:
  - ignore that paging record.

If the UE is in connected mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- if the IE "Used paging identity" is a UTRAN identity and if this U-RNTI is the same as the U-RNTI allocated to the UE:
  - if the optional IE "CN originated page to connected mode UE" is included:
    - indicate reception of paging; and
    - forward the IE "CN domain identity", the IE "Paging cause" and the IE "Paging record type identifier" to the upper layers;
  - otherwise:
    - perform a cell update procedure with cause "paging response" as specified in subclause 8.3.1.2; [Note to Hans: changed indentation to B3]
- ignore any other remaining IE "Paging record" that may be present in the message;
- otherwise:
  - ignore that paging record.

If the IE "BCCH modification info" is included, any UE in idle mode, CELL\_PCH or URA\_PCH state shall perform the actions as specified in subclause 8.1.1 in addition to any actions caused by the IE "Paging record" occurrences in the message as specified above.

## CHANGE REQUEST

⌘ **25.331 CR 919** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Corrections to UE variable handling		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 2001-08-29
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b> ⌘	<ol style="list-style-type: none"> <li>How to set variables when entering idle mode is not specified. Some variables have relevance in idle mode so it is suggested that the setting is explicitly stated. Also, how to set variables when leaving UTRA RRC connected mode to another RAT is missing.</li> <li>The initialisation of variables when entering UTRA RRC connected mode is specified separately for the case when coming from idle mode and when coming from another RAT. It is proposed to specify it in a common location to avoid inconsistencies and/or missing initialisation.</li> <li>Some variables that have the need "MP" have no defined value in idle mode and it is suggested to change them to "OP".</li> <li>In the variable VALUE_TAG, there is a need to store several value tags for the system information blocks with multiple occurrences.</li> <li>In the end of the cell update procedure, the variable ORDERED_CONFIGURATION is not set to FALSE, even if the variable was set to TRUE because the CELL UPDATE CONFIRM message contained physical channel, transport channel or radio bearer information elements. This needs to be corrected.</li> </ol>
<b>Summary of change:</b> ⌘	<ol style="list-style-type: none"> <li>In subclause 13.4, statements are added on how to set the values of each variable upon entering and leaving UTRA RRC connected mode and in some cases also when switched off and after selecting a new PLMN.</li> <li>The initialisations of variables in the procedures are replaced with reference to 13.4.</li> <li>A reference to 13.4 is added in the subclause "Actions when entering idle mode from connected mode" to make sure variables are cleared or set to appropriate values.</li> <li>For some variables, the need is changed from "MP" to "OP", to allow them to be cleared. Some minor corrections in the variable definitions are made also.</li> <li>In the variable VALUE_TAG, the definition of the value tags for the system information blocks with multiple occurrences have been corrected.</li> <li>Upon completion of the cell update procedure, the variable ORDERED_CONFIGURATION is set to FALSE when the CELL UPDATE</li> </ol>

CONFIRM message contained physical channel, transport channel or radio bearer information elements.

**Isolated impact analysis:**

Corrected functionality: Setting and initialisation of RRC state variables when entering and leaving UTRA RRC connected mode and the setting of the variable ORDERED\_CONFIGURATION in the cell update procedure.

Corrections to a function where the specification was ambiguous or not sufficiently explicit. They would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

**Consequences if not approved:** ☞ Unlear UE behaviour. Also, when new variables are introduced in the specification, there is a risk that initialisation when entering connected mode and/or idle mode will be missing.

**Clauses affected:** ☞ 8.1.3.6, 8.3.1.6, 8.3.1.7a, 8.3.1.8, 8.3.1.9, 8.3.1.9a, 8.3.1.12, 8.3.6.3, 8.3.7.4, 8.3.11.4, 8.5.2, 13.4.0, 13.4.00, 13.4.0a, 13.4.1, 13.4.2a, 13.4.3, 13.4.4, 13.4.5, 13.4.5a, 13.4.6, 13.4.7, 13.4.8, 13.4.8a, 13.4.9, 13.4.9a, 13.4.10, 13.4.11, 13.4.11a, 13.4.12, 13.4.14, 13.4.15, 13.4.16, 13.4.17, 13.4.18, 13.4.19, 13.4.20, 13.4.22, 13.4.23, 13.4.24, 13.4.25, 13.4.26, 13.4.26a, 13.4.27, 13.4.27a, 13.4.27b, 13.4.27c, 13.4.27d, 13.4.27e, 13.4.27f, 13.4.27g, 13.4.28, 13.4.29, 13.4.30, 13.4.31, 13.4.32

**Other specs affected:** ☞  Other core specifications ☞ 25.331 v4.1.0, CR 920  
 Test specifications  
 O&M Specifications

**Other comments:** ☞

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](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.

### 8.1.3.6 Reception of an RRC CONNECTION SETUP message by the UE

The UE shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION SETUP message with the value of the variable INITIAL\_UE\_IDENTITY.

If the values are different, the UE shall:

- ignore the rest of the message;

If the values are identical, the UE shall:

- stop timer T300, and act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following;
  - if the UE will be in the CELL\_FACH state at the conclusion of this procedure:
    - if the IE "Frequency info" is included:
      - select a suitable UTRA cell according to [4] on that frequency;
      - select PRACH according to subclause 8.5.17;
      - select Secondary CCPCH according to subclause 8.5.19;
  - perform the physical layer synchronization procedure as specified in [29];
  - enter a state according to subclause 8.6.3.3;
  - submit an RRC CONNECTION SETUP COMPLETE message to the lower layers on the uplink DCCH after successful state transition per subclause 8.6.3.3, with the contents set as specified below:
    - set the IE "RRC transaction identifier" to
      - the value of "RRC transaction identifier" in the entry for the RRC CONNECTION SETUP message in the table "Accepted transactions" in the variable TRANSACTIONS; and
      - clear that entry.
    - if the USIM is present:
      - set the "START" for each CN domain in the IE "START list" in the RRC CONNECTION SETUP COMPLETE message with the corresponding START value that is stored in the USIM [50]; and then
      - set the START value stored in the USIM [50] for any CN domain to the value "THRESHOLD" of the variable START\_THRESHOLD;
    - if the USIM is not present:
      - set the "START" for each CN domain in the IE "START list" in the RRC CONNECTION SETUP message to zero;
    - retrieve its UTRA UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and then
    - include this in IE "UE radio access capability" and IE "UE radio access capability extension", provided this IE is included in variable UE\_CAPABILITY\_REQUESTED;
    - retrieve its inter-RAT-specific UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and then
    - include this in IE "UE system specific capability".

When the RRC CONNECTION SETUP COMPLETE message has been submitted to lower layers for transmission the UE shall:

- if the UE has entered CELL\_FACH state:

- start timer T305 using its initial value if periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity" in system information block type 1;
- store the contents of the variable UE\_CAPABILITY\_REQUESTED in the variable UE\_CAPABILITY\_TRANSFERRED;
- initialise variables upon entering UTRA RRC connected mode as specified in subclause 13.4;
  - clear the variable UE\_CAPABILITY\_REQUESTED;
  - if the IE "Transport format combination subset" was not included in the RRC CONNECTION SETUP message:
    - set the IE "Current TFC subset" in the variable TFS\_SUBSET to "Full transport format combination set";
  - set the "Status" in the variable CIPHERING\_STATUS to "Not started";
  - set the "Reconfiguration" in the variable CIPHERING\_STATUS to FALSE;
  - set the "Status" in the variable INTEGRITY\_PROTECTION\_INFO to "Not started";
  - set the "Historical status" in the variable INTEGRITY\_PROTECTION\_INFO to "Never been active";
  - set the "Reconfiguration" in the variable INTEGRITY\_PROTECTION\_INFO to FALSE;
  - set the variable CELL\_UPDATE\_STARTED to FALSE;
  - set the variable CONFIGURATION\_INCOMPLETE to FALSE;
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
  - set the variable FAILURE\_INDICATOR to FALSE;
  - set the variable INCOMPATIBLE\_SECURITY\_RECONFIGURATION to FALSE;
  - set the variable INVALID\_CONFIGURATION to FALSE;
  - set the variable PROTOCOL\_ERROR\_INDICATOR to FALSE;
  - set the variable PROTOCOL\_ERROR\_REJECT to FALSE;
  - set the variable TGSN\_REPORTED to FALSE;
  - set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
  - clear all optional IEs in all variables, except those optional IEs that are set in this procedure;
- consider the procedure to be successful;

And the procedure ends.

### 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;
- if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;

The procedure ends.

### 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 the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;
- 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;
- if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;
  - 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;
  - if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
    - set the variable ORDERED\_RECONFIGURATION to FALSE;
  - 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;
  - 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;
- if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;
  - 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;
- if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;
- 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".

### 8.3.6.3 Reception of HANDOVER TO UTRAN COMMAND message by the UE

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

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

- store a U-RNTI value (32 bits), which is derived by the IEs "SRNC identity" (12 bits) and "S-RNTI 2" (10 bits) included in IE "U-RNTI-short". In order to produce a full size U-RNTI value, a full size "S-RNTI" (20 bits) shall be derived by padding the IE "S-RNTI 2" with 10 zero bits in the most significant positions; and
- initialise the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS with the signalling connections that remains after the handover according to the specifications of the source RAT;
- initialise the variable UE\_CAPABILITIES\_TRANSFERRED with the UE capabilities that have been transferred to the network up to the point prior to the handover, if any;
- initialise the variable TIMERS\_AND\_CONSTANTS to the default values and start to use those timer and constants values;
- if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Predefined configuration":
  - initiate the radio bearer and transport channel configuration in accordance with the predefined parameters identified by the IE "Predefined configuration identity";
  - initiate the physical channels in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity" and the received physical channel information elements;
  - store information about the established radio access bearers and radio bearers according to the IE "Predefined configuration identity"; and
  - set the IE "RAB Info Post" in the variable ESTABLISHED\_RABS and the IE "Re-establishment timer" in the IE "RAB Info" in the variable ESTABLISHED\_RABS to "useT314";
- if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Default configuration":
  - initiate the radio bearer and transport channel configuration in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity";
  - initiate the physical channels in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity" and the received physical channel information elements;

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

- set the IE "RAB Info Post" in the variable ESTABLISHED\_RABS and the IE "Re-establishment timer" in the IE "RAB Info" in the variable ESTABLISHED\_RABS to "useT314";
- if IE "Specification mode" is set to "Preconfiguration":
  - use the following values for parameters that are neither signalled within the HANDOVER TO UTRAN COMPLETE message nor included within pre-defined or default configuration:
    - 0 dB for the power offset  $P_{\text{Pilot-DPCH}}$  bearer in FDD;
    - calculate the Default DPCH Offset Value using the following formula:
      - in FDD:
 
$$\text{Default DPCH Offset Value} = (\text{SRNTI 2 mod } 600) * 512$$
      - in TDD:

Default DPCH Offset Value = (SRNTI 2 mod 7)

- handle the above Default DPCH Offset Value as if an IE with that value was included in the message, as specified in subclause 8.6.6.21;
- if IE "Specification mode" is set to "Complete specification":
  - initiate the radio bearer, transport channel and physical channel configuration in accordance with the received radio bearer, transport channel and physical channel information elements;
- perform an open loop estimation to determine the UL transmission power according to subclause 8.5.3;
- if ciphering has been activated and ongoing in the radio access technology from which inter- RAT handover is performed:
  - for the CN domain as in the IE "CN domain identity" which is included in the IE "RAB info" of the IE "RAB information to setup":
    - set the HFN component of the COUNT-C variable for all radio bearers and signalling radio bearers that use RLC-AM and RLC-UM to the START value as stored in the USIM for that CN domain; and
    - set the remaining LSBs of the HFN component of COUNT-C to zero;
    - set the HFN component of the COUNT-C variable for all radio bearers and signalling radio bearers that use the transparent mode of RLC to zero, while not incrementing the value of the HFN component of the COUNT-C variable at each CFN cycle; and
    - set the CFN component of the COUNT-C variable to the value of the CFN as calculated in subclause 8.5.15;
    - set the IE "Status" in the variable CIPHERING\_STATUS to "Started";
    - apply the same ciphering (ciphered/unciphered, algorithm) as prior to inter-RAT handover, unless a change of algorithm is requested by means of the IE "Ciphering algorithm";
    - apply ciphering immediately upon reception of the HANDOVER TO UTRAN COMMAND;

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

- if the IE "Status" in the variable CIPHERING\_STATUS is set to "Started" and transparent mode radio bearers have been established by this procedure:
  - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
  - at the CFN value as indicated in the response message in the IE "COUNT-C activation time":
    - set the HFN component of the COUNT-C variable to the START value as indicated in the IE "START list" of the response message for the relevant CN domain; and
    - set the remaining LSBs of the HFN component of COUNT-C to zero;
    - increment the HFN component of the COUNT-C variable by one;
    - set the CFN component of the COUNT-C to the value of the IE "COUNT-C activation time" of the response message. The HFN component and the CFN component completely initialise the COUNT-C variable;
    - step the COUNT-C variable, as normal, at each CFN value. The HFN component is no longer fixed in value but incremented at each CFN cycle;
- transmit a HANDOVER TO UTRAN COMPLETE message on the uplink DCCH, using the new ciphering configuration, only if ciphering has been started;
- when the HANDOVER TO UTRAN COMPLETE message has been submitted to lower layers for transmission,
  - initialise variables upon entering UTRA RRC connected mode as specified in subclause 13.4;

- if the IE "Transport format combination subset" was not included in the HANDOVER TO UTRAN COMMAND message or in the predefined parameters;
    - set the IE "Current TFC subset" in the variable TFS\_SUBSET to "Full transport format combination set";
  - set the IE "Status" in the variable CIPHERING\_STATUS to "Not started";
  - set the IE "Reconfiguration" in the variable CIPHERING\_STATUS to FALSE;
  - set the IE "Status" in the variable INTEGRITY\_PROTECTION\_INFO to "Not started";
  - set the IE "Historical status" in the variable INTEGRITY\_PROTECTION\_INFO to "Never been active";
  - set the IE "Reconfiguration" in the variable INTEGRITY\_PROTECTION\_INFO to FALSE;
  - set the variable CELL\_UPDATE\_STARTED to FALSE;
  - set the variable CONFIGURATION\_INCOMPLETE to FALSE;
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
  - set the variable FAILURE\_INDICATOR to FALSE;
  - set the variable INCOMPATIBLE\_SECURITY\_RECONFIGURATION to FALSE;
  - set the variable INVALID\_CONFIGURATION to FALSE;
  - set the variable PROTOCOL\_ERROR\_INDICATOR, TFC\_SUBSET to FALSE;
  - set the variable PROTOCOL\_ERROR\_REJECT to FALSE;
  - set the variable TGSN\_REPORTED to FALSE;
  - set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
  - clear all optional IEs in all variables, except those optional IEs that are set in this procedure;
- and the procedure ends.

#### 8.3.7.4 Successful completion of the inter-RAT handover

Upon successfully completing the handover, UTRAN should:

- release the radio connection; and
- remove all context information for the concerned UE.

Upon successfully completing the handover, the UE shall:

- if the USIM is present:
  - store the current START value for every CN domain in the USIM [50];
  - if the "START" stored in the USIM [50] for a CN domain is greater than the value "THRESHOLD" of the variable START\_THRESHOLD:
    - delete the ciphering and integrity keys that are stored in the USIM for that CN domain;
    - inform the deletion of these keys to upper layers.

- clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4;

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



#### 8.3.11.4 Successful completion of the cell change order

Upon successful completion of the cell change order, the UE shall:

- stop timer T309.
- clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4;

Upon indication of the UE having successfully completed the cell change order, UTRAN should:

- release the radio connection; and
- remove all context information for the concerned UE.

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

## 8.5.2 Actions when entering idle mode from connected mode

When entering idle mode from connected mode, the UE shall:

- clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4;
- attempt to select a suitable cell to camp on.

When leaving connected mode according to [4], the UE shall:

- perform cell selection.

While camping on a cell, the UE shall:

- acquire system information according to the system information procedure in subclause 8.1;
- perform measurements according to the measurement control procedure specified in subclause 8.4; and
- if the UE is registered:
  - be prepared to receive paging messages according to the paging procedure in subclause 8.2.

If IE "PLMN identity" within variable SELECTED\_PLMN has the value "GSM-MAP", the UE shall:

- delete any NAS system information received in connected mode;
- acquire the NAS system information in system information block type 1; and
- proceed according to subclause 8.6.1.2.

When entering idle mode, the UE shall:

- if the USIM is present:
  - store the current START value for every CN domain in the USIM [50];
  - if the "START" stored in the USIM [50] for a CN domain is greater than the value "THRESHOLD" of the variable START\_THRESHOLD:
    - delete the ciphering and integrity keys that are stored in the USIM for that CN domain;
    - inform the deletion of these keys to upper layers.

## 13.4 UE variables

### 13.4.0 CELL INFO LIST

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

The first position in Intra-frequency cell info list corresponds to Intra-frequency cell id 0, the second to Intra-frequency cell id 1, etc.

The first position in Inter-frequency cell info list corresponds to Inter-frequency cell id 0, the second to Inter-frequency cell id 1, etc.

The first position in Inter-RAT cell info list corresponds to Intra-frequency cell id 0, the second to Inter-RAT cell id 1, etc.

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

NOTE: This IE shall be cleared when entering UTRA RRC connected mode, when **leaving UTRA RRC connected mode**, when switched off as well as at selection of a new PLMN.

#### 13.4.00 CELL\_POSITION

This variable stores the CELL\_POSITION for UE-based OTDOA (10.3.7.106).

All IEs in this variable shall be cleared when switched off and as well as at selection of a new PLMN and when leaving UTRA RRC connected mode to another RAT.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Relative North	OP		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference cell.
Relative East	OP		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference cell.
Relative Altitude	OP		Integer(-4000..4000)	Relative altitude in meters compared to ref. cell.

### 13.4.0a CELL\_UPDATE\_STARTED

This variable indicates whether a cell update or URA update procedure is in progress.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell update started	MP		Boolean	TRUE means a cell or URA update procedure is in progress. Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.1 CIPHERING\_STATUS

This variable contains information about the current status of ciphering in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Status	MP		Enumerated(Not started, Started)	Set to "Not started" when entering UTRA RRC connected mode. Set to "Not started" when leaving UTRA RRC connected mode.
Reconfiguration	MP		Boolean	TRUE means an RRC procedure performing reconfiguration of ciphering is ongoing. Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.2 Void

#### 13.4.2a CONFIGURATION\_INCOMPLETE

This variable indicates whether a received measurement control message contains invalid an incomplete measurement configuration.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Configuration incomplete	MP		Boolean	TRUE: An incomplete configuration has been detected Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.3 C\_RNTI

This variable stores the assigned C-RNTI for this UE when in CELL\_FACH state.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
C-RNTI	OP		C-RNTI 10.3.3.8	Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure. Cleared when leaving UTRA RRC connected mode.

### 13.4.4 DOFF

This variable contains the default offset value in the UE. See [10] for details.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Default DPCH Offset Value (DOFF)	OP		Default DPCH Offset Value, 10.3.6.16	Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure. Cleared when leaving UTRA RRC connected mode.

### 13.4.5 ESTABLISHED\_RABS

This variable is used to store information about the established radio access bearers and signalling radio bearers in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB information	OP	1 to <maxRABset up>		For each RAB established <u>Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
>RAB info	MP		RAB info 10.3.4.8	
>RB information	MP	1 to <maxRBper RAB>		For each RB belonging to the RAB
>>RB identity	MP		RB identity 10.3.4.16	
>>Subflow	MP		Integer(0..<maxSubflowcount>)	Reference to the RAB subflow implemented by this RB
>>RB started	MD		Enumerated(stopped, started)	Default value is started
Signalling radio bearer information	OP	1 to <maxSRBset up>		In the order of RB0 and upwards <u>Cleared when leaving UTRA RRC connected mode.</u>
>RB started	MD		Enumerated(stopped, started)	Default value is started

### 13.4.5a ESTABLISHED\_SIGNALLING\_CONNECTIONS

This variable is used to store information about established signalling connections.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Signalling connection list	OP	1 to <maxCNdomains>		For each established signalling connection <u>Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
>Signalling connection identity	MP		CN domain identity 10.3.1.1	

### 13.4.6 ESTABLISHMENT\_CAUSE

This variable is used to store the cause for establishment of a signalling connection received by upper layers, to be used at RRC connection establishment.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Establishment cause	OP		Establishment cause 10.3.3.11	Cleared when <b>leaving UTRA RRC connected mode.</b>

### 13.4.7 FAILURE\_CAUSE

This variable contains the cause for failure of a UE initiated procedure, to be reported in a retransmitted message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	OP		Failure cause 10.3.3.13	Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>

### 13.4.8 FAILURE\_INDICATOR

This variable indicates whether the procedure has failed for a UE initiated procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure indicator	MP		Boolean	TRUE: Procedure has failed Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when <b>leaving UTRA RRC connected mode.</b>

### 13.4.8a INCOMPATIBLE\_SECURITY\_RECONFIGURATION

This variable indicates whether an incompatible simultaneous reconfiguration of a security function has been received.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Incompatible security reconfiguration	MP		Boolean	TRUE: An incompatible simultaneous security reconfiguration has been detected Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when <b>leaving UTRA RRC connected mode.</b>

### 13.4.9 INITIAL\_UE\_IDENTITY

In this variable the identity used by the UE when establishing an RRC connection is stored.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Initial UE identity	OP		Initial UE identity 10.3.3.15	Cleared when <b>leaving UTRA RRC connected mode.</b>

### 13.4.9a INTEGRITY\_PROTECTION\_ACTIVATION\_INFO

This variable contains information to be sent to UTRAN about when a new integrity protection configuration shall be activated in the uplink for signalling radio bearers in case of modification of integrity protection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink Integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.10 INTEGRITY\_PROTECTION\_INFO

This variable contains information about the current status of the integrity protection in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Historical status	MP		Enumerated(Never been active, Has been active)	Set to "Never been active" when entering UTRA RRC connected mode.
Status	MP		Enumerated(Not started, Started)	Set to "Not started" when entering UTRA RRC connected mode. Set to "Not started" when leaving UTRA RRC connected mode.
Reconfiguration	MP		Boolean	TRUE means a reconfiguration of integrity protection is ongoing. Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.
Signalling radio bearer specific integrity protection information	MPOP	1 to <maxSRBsetup>		When integrity protection is started, sStatus information for RB0- RB4 in that order. Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.
>Uplink RRC HFN	MP		Bitstring (28)	
>Downlink RRC HFN	MP		Bitstring (28)	
>Uplink RRC Message sequence number	MP		Integer (0..15)	
>Downlink RRC Message sequence number	OP		Integer (0..15)	

### 13.4.11 INVALID\_CONFIGURATION

This variable indicates whether a received message contained an invalid configuration, by means of invalid values or invalid combinations of information elements.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Invalid configuration	MP		Boolean	TRUE: An invalid configuration has been detected Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.11a LATEST\_CONFIGURED\_CN\_DOMAIN

This variable stores the CN-domain that was most recently configured to be used for ciphering and integrity protection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Latest configured CN domain	OP		CN domain identity 10.3.1.1	Cleared when entering UTRA RRC connected mode when not stated otherwise in the procedure. Cleared when leaving UTRA RRC connected mode.

### 13.4.12 MEASUREMENT\_IDENTITY

This variable stores the measurements configured in the UE. For each configured measurement, the information below shall be stored.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MEASUREMENT CONTROL	OP		MEASUREMENT CONTROL 10.2.17, System Information Block type 11 10.2.48.8.1 2, System Information Block type 12 10.2.48.8.1 3	Information as contained in these messages. Cleared when entering UTRA RRC connected mode when not stated otherwise in the procedure (8.4.1.8-8.4.1.9). Cleared when leaving UTRA RRC connected mode when not stated otherwise in the procedure (8.4.1.9a).

### 13.4.13 Void

### 13.4.14 ORDERED\_RECONFIGURATION

This variable stores information about an ongoing Reconfiguration procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ordered reconfiguration	MP		Boolean	TRUE means that a Reconfiguration procedure is ongoing. Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.15 PDCP\_SN\_INFO

This variable contains PDCP receive sequence numbers for one or several radio bearers to be included in a response message to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB with PDCP information list	OP	1 to <maxRBall RABs>		Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.
>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	

### 13.4.16 PROTOCOL\_ERROR\_INDICATOR

This variable indicates whether there exist a protocol error that is to be reported to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error indicator	MP		Protocol error indicator 10.3.3.27	Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.17 PROTOCOL\_ERROR\_INFORMATION

This variable contains diagnostics to be reported to UTRAN for a message that was not completely understood.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error information	OP		Protocol error information 10.3.8.12	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.18 PROTOCOL\_ERROR\_REJECT

This variable indicates whether there has occurred a severe protocol error causing the ongoing procedure to fail.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error reject	MP		Boolean	TRUE: a severe protocol error has occurred Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.19 RB\_TIMER\_INDICATOR

This variable contains information to be sent to UTRAN if any of the timers T314 or T315 has expired when the UE sends a cell update with cause RL failure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB timer indicator	OP		RB timer indicator 10.3.3.28	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.20 RB\_UPLINK\_CIPHERING\_ACTIVATION\_TIME\_INFO

This variable contains information to be sent to UTRAN about when a new ciphering configuration shall be activated in the uplink for radio bearers using RLC-AM or RLC-UM.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.21 SELECTED\_PLMN

This variable contains the type of and identity of the selected PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN Type	MP		PLMN Type 10.3.1.12	
CHOICE <i>identity type</i> >PLMN identity	MP		PLMN identity 10.3.1.11	
>SID			SID 10.3.9.11	

CHOICE <i>identity type</i>	Condition under which the given <i>identity type</i> is chosen
PLMN identity	PLMN Type is "GSM-MAP"
SID	PLMN Type is "ANSI-41"

### 13.4.22 START\_THRESHOLD

This variable contains information about the maximum allowed value of the START for a CN domain.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
THRESHOLD	OP		Integer (0..1048576)	20 bits Cleared when entering UTRA RRC connected mode when not stated otherwise in the procedure. Cleared when leaving UTRA RRC connected mode.

### 13.4.23 START\_VALUE\_TO\_TRANSMIT

This variable contains the value of START for new radio bearer(s) to be transmitted in a response message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
START	OP		START 10.3.3.38	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.24 TFC\_SUBSET

This variable contains information about the TFC subset currently applied.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Current TFC subset	MP		Transport Format Combination Subset 10.3.5.22	<u>Set to “Full transport format set” when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u>
>>Duration	OP		TFC Control duration 10.3.6.80	<u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>
>>Default TFC subset	OP		Transport Format Combination Subset 10.3.5.22	The TFC subset to go back to when any temporary limitation is released <u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>
>TDD				
>>TFCS list	MP	1 to < maxCCTrC H >		<u>One TFCS is created when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u>
>>>TFCS identity	MP		<u>Transport Format Combination Set Identity 10.3.5.21</u>	<u>“TFCS ID” is set to 1 when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u> <u>“Shared channel indicator” is set to FALSE when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u>
>>>>Current TFC subset	MP		Transport Format Combination Subset 10.3.5.22	<u>Set to “Full transport format set” when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u>
>>>>Duration	OP		TFC Control duration 10.3.6.80	<u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>
>>>>Default TFC subset	OP		Transport Format Combination Subset 10.3.5.22	The TFC subset to go back to when any temporary limitation is released <u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>

### 13.4.25 TGPS\_IDENTITY

This variable contains the configuration parameters of a compressed mode transmission gap pattern sequence

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPS_IDENTITY	OP		DPCH compressed mode info 10.3.6.33	Information as contained in the IE group "Transmission gap pattern sequence configuration parameters". <u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>
TGPS Status Flag	MP		Enumerated( active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence

### 13.4.26 TGSN\_REPORTED

This variable specifies whether an IE "Proposed TGSN" was reported to the UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Proposed TGSN reported	MP		Boolean	<u>Set to FALSE when entering UTRA RRC connected mode.</u> <u>Set to FALSE when leaving UTRA RRC connected mode.</u>

### 13.4.26a TIMERS\_AND\_CONSTANTS

This variable contains the values for all timers and constants used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE Timers and constants in connected mode	MD		UE Timers and constants in connected mode 10.3.3.43	Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.43 apply and - For parameters with need OP, the parameters are absent <u>All parameters are set to the default value when leaving UTRA RRC connected mode to another RAT.</u>

### 13.4.27 TRANSACTIONS

This variable stores the identifications of the ongoing RRC procedure transactions.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Accepted transactions	OP	1 to <maxtrans actions>		Cleared when <b>leaving UTRA RRC connected mode.</b>
>Message type	MP		Message Type	
>RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Rejected transactions	OP	1 to <maxtrans actions>		Cleared when <b>leaving UTRA RRC connected mode.</b>
>Message type	MP		Message Type	
>RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	

### 13.4.27a TRIGGERED\_1A\_EVENTS

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

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

### 13.4.27b TRIGGERED\_1B\_EVENTS

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to <maxCellMeas>		Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

### 13.4.27c TRIGGERED\_1C\_EVENTS

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMe as>		Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected</b> mode.
>primary CPICH	MP		Primary CPICH info 10.3.6.60	
>sent reports	MP		Integer(1..Infinity)	Number of reports sent to UTRAN in case of event triggered periodical reporting

### 13.4.27d BEST\_CELL\_1D\_EVENT

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Best cell	MPOP		Primary CPICH info 10.3.6.60	Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected</b> mode.

### 13.4.27e TRIGGERED\_1E\_EVENTS

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMe as>		Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected</b> mode.
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

### 13.4.27f TRIGGERED\_1F\_EVENTS

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMe as>		Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected</b> mode.
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

### 13.4.27g UE\_CAPABILITY\_REQUESTED

This variable stores information about the UE capabilities that have been requested by UTRAN but that have not yet been transferred to UTRAN.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE radio access capability	OP		UE radio access capability 10.3.3.42	Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>
UE radio access capability extension	OP		UE radio access capability extension 10.3.3.42a	Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>
UE system specific capability	OP	1 to <maxSystemCapability>	Inter-RAT UE radio access capability 10.3.8.7	Includes inter-RAT classmark Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	

### 13.4.28 UE\_CAPABILITY\_TRANSFERRED

This variable stores information about which UE capabilities that have been transferred to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE radio access capability	OP		UE radio access capability 10.3.3.42	Cleared when entering UTRA RRC connected mode when <u>not stated otherwise in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
UE radio access capability extension	OP		UE radio access capability extension 10.3.3.42a	Cleared when entering UTRA RRC connected mode when <u>not stated otherwise in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
UE system specific capability	OP	1 to <maxSystemCapability>	Inter-RAT UE radio access capability 10.3.8.7	Includes inter-RAT classmark Cleared when entering UTRA RRC connected mode when <u>not stated otherwise in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	

### 13.4.29 UNSUPPORTED\_CONFIGURATION

This variable indicates whether a received message contained a configuration that is not supported by the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Unsupported configuration	MP		Boolean	TRUE: An unsupported configuration has been detected Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.30 URA\_IDENTITY

This variable stores the assigned URA identity for this UE when in URA\_PCH state.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
URA identity	OP		URA identity 10.3.2.6	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.31 U\_RNTI

This variable stores the assigned U-RNTI for this UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
U-RNTI	MPOP		U-RNTI 10.3.3.47	Cleared when leaving UTRA RRC connected mode.

### 13.4.32 VALUE\_TAG

This variable contains information about the value tag for the last received system information block of a given type, for all system information blocks using value tags. The UE shall maintain one instance of this variable for the current selected cell. The UE may store several store several instances of this variable, one for each cell, to be used if the UE returns to these cells.

All IEs in this variable shall be cleared when switched off and as well as at selection of a new PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB value tag	<u>MPOP</u>		MIB value tag 10.3.8.9	Value tag for the master information block
SB 1 value tag	<u>MPOP</u>		Cell value tag 10.3.8.4	Value tag for the scheduling block type 1
SB 2 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the scheduling block type 2
SIB 1 value tag	<i>CV-GSM</i>		PLMN value tag 10.3.8.10	Value tag for the system information block type 1
SIB 2 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 2
SIB 3 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 3
SIB 4 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 4
SIB 5 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 5
SIB 6 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 6
<i>CHOICE mode</i>	<u>MP</u>			
>FDD				
>>SIB 8 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 8
>TDD				(no data)
SIB 11 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 11
SIB 12 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 12
SIB 13 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13
SIB 13.1 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13.1
SIB 13.2 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13.2
SIB 13.3 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13.3
SIB 13.4 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13.4
SIB 15 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 15
SIB 15.1 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 15.1
<u>SIB 15.2 value tag list</u>	<u>OP</u>	1 to <maxSat >		List of value tags for all stored occurrences of system information block type 15.2
≥SIB 15.2 value tag	<u>MP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 15.2
>SIB occurrence identity and value tag	<u>MP</u>		<u>SIB occurrence identity and value tag 10.3.8.20b</u>	
<u>SIB 15.2 value tag list</u>	<u>OP</u>	1 to <maxSat >		List of value tags for all stored occurrences of system information block type 15.2
≥SIB 15.3 value tag	<u>MP</u>		PLMN value tag 10.3.8.10	Value tag for the system information block type 15.3
>SIB occurrence identity and value tag	<u>MP</u>		<u>SIB occurrence identity and value tag 10.3.8.20b</u>	
SIB 15.4 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 15.4
SIB 16 value tag list	<u>OPMP</u>	1 to <maxPre defConfig >	PLMN value tag 10.3.8.10	List of value tags for all stored occurrences of the system information block type 16

>Predefined configuration identity and value tag	<u>MP</u>		Predefined configuration identity and value tag 10.3.8.11	
SIB 18 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 18

Condition	Explanation
<i>GSM</i>	This information is <del>only stored</del> <u>optional</u> when the PLMN Type in the variable SELECTED_PLMN is "GSM-MAP" <u>and never stored otherwise.</u>
<i>ANSI</i>	This information is <del>only stored</del> <u>optional</u> when the PLMN Type in the variable SELECTED_PLMN is "ANSI-41" <u>and never stored otherwise.</u>

## CHANGE REQUEST

⌘ **25.331 CR 920** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Corrections to UE variable handling		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 2001-08-29
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)
			REL-5 (Release 5)

**Reason for change:** ⌘

1. How to set variables when entering idle mode is not specified. Some variables have relevance in idle mode so it is suggested that the setting is explicitly stated. Also, how to set variables when leaving UTRA RRC connected mode to another RAT is missing.
2. The initialisation of variables when entering UTRA RRC connected mode is specified separately for the case when coming from idle mode and when coming from another RAT. It is proposed to specify it in a common location to avoid inconsistencies and/or missing initialisation.
3. Some variables that have the need "MP" have no defined value in idle mode and it is suggested to change them to "OP".
4. In the variable VALUE\_TAG, there is a need to store several value tags for the system information blocks with multiple occurrences.
5. In the end of the cell update procedure, the variable ORDERED\_CONFIGURATION is not set to FALSE, even if the variable was set to TRUE because the CELL UPDATE CONFIRM message contained physical channel, transport channel or radio bearer information elements. This needs to be corrected.

**Summary of change:** ⌘

1. In subclause 13.4, statements are added on how to set the values of each variable upon entering and leaving UTRA RRC connected mode and in some cases also when switched off and after selecting a new PLMN.
2. The initialisations of variables in the procedures are replaced with reference to 13.4.
3. A reference to 13.4 is added in the subclause "Actions when entering idle mode from connected mode" to make sure variables are cleared or set to appropriate values.
4. For some variables, the need is changed from "MP" to "OP", to allow them to be cleared. Some minor corrections in the variable definitions are made also.
5. In the variable VALUE\_TAG, the definition of the value tags for the system information blocks with multiple occurrences have been corrected.
6. Upon completion of the cell update procedure, the variable ORDERED\_CONFIGURATION is set to FALSE when the CELL UPDATE

CONFIRM message contained physical channel, transport channel or radio bearer information elements.

**Isolated impact analysis:**

Corrected functionality: Setting and initialisation of RRC state variables when entering and leaving UTRA RRC connected mode and the setting of the variable ORDERED\_CONFIGURATION in the cell update procedure.

Corrections to a function where the specification was ambiguous or not sufficiently explicit. They would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

**Consequences if not approved:** ☞ Unlear UE behaviour. Also, when new variables are introduced in the specification, there is a risk that initialisation when entering connected mode and/or idle mode will be missing.

**Clauses affected:** ☞ 8.1.3.6, 8.3.1.6, 8.3.1.7a, 8.3.1.8, 8.3.1.9, 8.3.1.9a, 8.3.1.12, 8.3.6.3, 8.3.7.4, 8.3.11.4, 8.5.2, 13.4.0, 13.4.00, 13.4.0a, 13.4.1, 13.4.2a, 13.4.3, 13.4.4, 13.4.5, 13.4.5a, 13.4.6, 13.4.7, 13.4.8, 13.4.8a, 13.4.9, 13.4.9a, 13.4.10, 13.4.11, 13.4.11a, 13.4.12, 13.4.14, 13.4.15, 13.4.16, 13.4.17, 13.4.18, 13.4.19, 13.4.20, 13.4.22, 13.4.23, 13.4.24, 13.4.25, 13.4.26, 13.4.26a, 13.4.27, 13.4.27a, 13.4.27b, 13.4.27c, 13.4.27d, 13.4.27e, 13.4.27f, 13.4.27g, 13.4.28, 13.4.29, 13.4.30, 13.4.31, 13.4.32

**Other specs affected:** ☞  Other core specifications ☞ 25.331 v3.7.0, CR 919r1  
 Test specifications  
 O&M Specifications

**Other comments:** ☞

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](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.

### 8.1.3.6 Reception of an RRC CONNECTION SETUP message by the UE

The UE shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION SETUP message with the value of the variable INITIAL\_UE\_IDENTITY.

If the values are different, the UE shall:

- ignore the rest of the message;

If the values are identical, the UE shall:

- stop timer T300, and act upon all received information elements as specified in subclause 8.6, unless specified otherwise in the following;
- if the UE will be in the CELL\_FACH state at the conclusion of this procedure:
  - if the IE "Frequency info" is included:
    - select a suitable UTRA cell according to [4] on that frequency;
    - select PRACH according to subclause 8.5.17;
    - select Secondary CCPCH according to subclause 8.5.19;
- perform the physical layer synchronisation procedure as specified in [29];
- enter a state according to subclause 8.6.3.3;
- submit an RRC CONNECTION SETUP COMPLETE message to the lower layers on the uplink DCCH after successful state transition per subclause 8.6.3.3, with the contents set as specified below:
  - set the IE "RRC transaction identifier" to
    - the value of "RRC transaction identifier" in the entry for the RRC CONNECTION SETUP message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - clear that entry.
  - if the USIM is present:
    - set the "START" for each CN domain in the IE "START list" in the RRC CONNECTION SETUP COMPLETE message with the corresponding START value that is stored in the USIM [50]; and then
    - set the START value stored in the USIM [50] for any CN domain to the value "THRESHOLD" of the variable START\_THRESHOLD;
  - if the USIM is not present:
    - set the "START" for each CN domain in the IE "START list" in the RRC CONNECTION SETUP message to zero;
  - retrieve its UTRA UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and then
  - include this in IE "UE radio access capability" and IE "UE radio access capability extension", provided this IE is included in variable UE\_CAPABILITY\_REQUESTED;
  - retrieve its inter-RAT-specific UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and then
  - include this in IE "UE system specific capability".

When of the RRC CONNECTION SETUP COMPLETE message has been submitted to lower layers for transmission the UE shall:

- if the UE has entered CELL\_FACH state:

- start timer T305 using its initial value if periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity" in system information block type 1;
- store the contents of the variable UE\_CAPABILITY\_REQUESTED into the variable UE\_CAPABILITY\_TRANSFERRED;
- initialise variables upon entering UTRA RRC connected mode as specified in subclause 13.4;
  - clear the variable UE\_CAPABILITY\_REQUESTED;
  - if the IE "Transport format combination subset" was not included in the RRC CONNECTION SETUP message:
    - set the IE "Current TFC subset" in the variable TFS\_SUBSET to "Full transport format combination set";
  - set the "Status" in the variable CIPHERING\_STATUS to "Not started";
  - set the "Reconfiguration" in the variable CIPHERING\_STATUS to FALSE;
  - set the "Status" in the variable INTEGRITY\_PROTECTION\_INFO to "Not started";
  - set the "Historical status" in the variable INTEGRITY\_PROTECTION\_INFO to "Never been active";
  - set the "Reconfiguration" in the variable INTEGRITY\_PROTECTION\_INFO to FALSE;
  - set the variable CELL\_UPDATE\_STARTED to FALSE;
  - set the variable CONFIGURATION\_INCOMPLETE to FALSE;
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
  - set the variable FAILURE\_INDICATOR to FALSE;
  - set the variable INCOMPATIBLE\_SECURITY\_RECONFIGURATION to FALSE;
  - set the variable INVALID\_CONFIGURATION to FALSE;
  - set the variable PROTOCOL\_ERROR\_INDICATOR to FALSE;
  - set the variable PROTOCOL\_ERROR\_REJECT to FALSE;
  - set the variable TGSN\_REPORTED to FALSE;
  - set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
  - clear all optional IEs in all variables, except those optional IEs that are set in this procedure;
- consider the procedure to be successful;

And the procedure ends.



### 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;
- if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;

The procedure ends.

### 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 the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;
- 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;
- if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;
  - 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;
  - if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
    - set the variable ORDERED\_RECONFIGURATION to FALSE;
  - 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;
  - 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;
- if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;
  - 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;
- if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
- 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;
- 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".

### 8.3.6.3 Reception of HANDOVER TO UTRAN COMMAND message by the UE

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

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

- store a U-RNTI value (32 bits), which is derived by the IEs "SRNC identity" (12 bits) and "S-RNTI 2" (10 bits) included in IE "U-RNTI-short". In order to produce a full size U-RNTI value, a full size "S-RNTI" (20 bits) shall be derived by padding the IE "S-RNTI 2" with 10 zero bits in the most significant positions; and
- initialise the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS with the signalling connections that remains after the handover according to the specifications of the source RAT;
- initialise the variable UE\_CAPABILITIES\_TRANSFERRED with the UE capabilities that have been transferred to the network up to the point prior to the handover, if any;
- initialise the variable TIMERS\_AND\_CONSTANTS to the default values and start to use those timer and constants values;
- if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Predefined configuration":
  - initiate the radio bearer and transport channel configuration in accordance with the predefined parameters identified by the IE "Predefined configuration identity";
  - initiate the physical channels in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity" and the received physical channel information elements;
  - store information about the established radio access bearers and radio bearers according to the IE "Predefined configuration identity"; and
  - set the IE "RAB Info Post" in the variable ESTABLISHED\_RABS and the IE "Re-establishment timer" in the IE "RAB Info" in the variable ESTABLISHED\_RABS to "useT314";
- if IE "Specification mode" is set to "Preconfiguration" and IE "Preconfiguration mode" is set to "Default configuration":
  - initiate the radio bearer and transport channel configuration in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity";
  - initiate the physical channels in accordance with the default parameters identified by the IE "Default configuration mode" and IE "Default configuration identity" and the received physical channel information elements;

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

- set the IE "RAB Info Post" in the variable ESTABLISHED\_RABS and the IE "Re-establishment timer" in the IE "RAB Info" in the variable ESTABLISHED\_RABS to "useT314";
- if IE "Specification mode" is set to "Preconfiguration":
  - use the following values for parameters that are neither signalled within the HANDOVER TO UTRAN COMPLETE message nor included within pre-defined or default configuration:
    - 0 dB for the power offset  $P_{\text{Pilot-DPDCH}}$  bearer in FDD;
    - calculate the Default DPCH Offset Value using the following formula:
      - in FDD:
 
$$\text{Default DPCH Offset Value} = (\text{SRNTI 2 mod } 600) * 512$$
      - in TDD:

Default DPCH Offset Value = (SRNTI 2 mod 7)

- handle the above Default DPCH Offset Value as if an IE with that value was included in the message, as specified in subclause 8.6.6.21;
- if IE "Specification mode" is set to "Complete specification":
  - initiate the radio bearer, transport channel and physical channel configuration in accordance with the received radio bearer, transport channel and physical channel information elements;
- perform an open loop estimation to determine the UL transmission power according to subclause 8.5.3;
- if ciphering has been activated and ongoing in the radio access technology from which inter- RAT handover is performed:
  - for the CN domain as in the IE "CN domain identity" which is included in the IE "RAB info" of the IE "RAB information to setup":
    - set the HFN component of the COUNT-C variable for all radio bearers and signalling radio bearers that use RLC-AM and RLC-UM to the START value as stored in the USIM for that CN domain; and
    - set the remaining LSBs of the HFN component of COUNT-C to zero;
    - set the HFN component of the COUNT-C variable for all radio bearers and signalling radio bearers that use the transparent mode of RLC to zero, while not incrementing the value of the HFN component of the COUNT-C variable at each CFN cycle; and
    - set the CFN component of the COUNT-C variable to the value of the CFN as calculated in subclause 8.5.15;
    - set the IE "Status" in the variable CIPHERING\_STATUS to "Started";
    - apply the same ciphering (ciphered/unciphered, algorithm) as prior to inter-RAT handover, unless a change of algorithm is requested by means of the IE "Ciphering algorithm";
    - apply ciphering immediately upon reception of the HANDOVER TO UTRAN COMMAND;

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

- if the IE "Status" in the variable CIPHERING\_STATUS is set to "Started" and transparent mode radio bearers have been established by this procedure:
  - include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
  - at the CFN value as indicated in the response message in the IE "COUNT-C activation time":
    - set the HFN component of the COUNT-C variable to the START value as indicated in the IE "START list" of the response message for the relevant CN domain; and
    - set the remaining LSBs of the HFN component of COUNT-C to zero;
    - increment the HFN component of the COUNT-C variable by one;
    - set the CFN component of the COUNT-C to the value of the IE "COUNT-C activation time" of the response message. The HFN component and the CFN component completely initialise the COUNT-C variable;
    - step the COUNT-C variable, as normal, at each CFN value. The HFN component is no longer fixed in value but incremented at each CFN cycle;
- transmit a HANDOVER TO UTRAN COMPLETE message on the uplink DCCH, using the new ciphering configuration, only if ciphering has been started;
- when the HANDOVER TO UTRAN COMPLETE message has been submitted to lower layers for transmission,
  - initialise variables upon entering UTRA RRC connected mode as specified in subclause 13.4;

- if the IE "Transport format combination subset" was not included in the HANDOVER TO UTRAN COMMAND message or in the predefined parameters;
    - set the IE "Current TFC subset" in the variable TFS\_SUBSET to "Full transport format combination set";
  - set the IE "Status" in the variable CIPHERING\_STATUS to "Not started";
  - set the IE "Reconfiguration" in the variable CIPHERING\_STATUS to FALSE;
  - set the IE "Status" in the variable INTEGRITY\_PROTECTION\_INFO to "Not started";
  - set the IE "Historical status" in the variable INTEGRITY\_PROTECTION\_INFO to "Never been active";
  - set the IE "Reconfiguration" in the variable INTEGRITY\_PROTECTION\_INFO to FALSE;
  - set the variable CELL\_UPDATE\_STARTED to FALSE;
  - set the variable CONFIGURATION\_INCOMPLETE to FALSE;
  - set the variable ORDERED\_RECONFIGURATION to FALSE;
  - set the variable FAILURE\_INDICATOR to FALSE;
  - set the variable INCOMPATIBLE\_SECURITY\_RECONFIGURATION to FALSE;
  - set the variable INVALID\_CONFIGURATION to FALSE;
  - set the variable PROTOCOL\_ERROR\_INDICATOR, TFC\_SUBSET to FALSE;
  - set the variable PROTOCOL\_ERROR\_REJECT to FALSE;
  - set the variable TGSN\_REPORTED to FALSE;
  - set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
  - clear all optional IEs in all variables, except those optional IEs that are set in this procedure;
- and the procedure ends.



#### 8.3.7.4 Successful completion of the inter-RAT handover

Upon successfully completing the handover, UTRAN should:

- release the radio connection; and
- remove all context information for the concerned UE.

Upon successfully completing the handover, the UE shall:

- if the USIM is present:
  - store the current START value for every CN domain in the USIM [50];
  - if the "START" stored in the USIM [50] for a CN domain is greater than the value "THRESHOLD" of the variable START\_THRESHOLD:
    - delete the ciphering and integrity keys that are stored in the USIM for that CN domain;
    - inform the deletion of these keys to upper layers.

- clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4;

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

#### 8.3.11.4 Successful completion of the cell change order

Upon successful completion of the cell change order, the UE shall:

- stop timer T309.
- clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4;

Upon indication of the UE having successfully completed the cell change order, UTRAN should:

- release the radio connection; and
- remove all context information for the concerned UE.

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

## 8.5.2 Actions when entering idle mode from connected mode

When entering idle mode from connected mode, the UE shall:

- clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4;
- attempt to select a suitable cell to camp on.

When leaving connected mode according to [4], the UE shall:

- perform cell selection.

While camping on a cell, the UE shall:

- acquire system information according to the system information procedure in subclause 8.1;
- perform measurements according to the measurement control procedure specified in subclause 8.4; and
- if the UE is registered:
  - be prepared to receive paging messages according to the paging procedure in subclause 8.2.

If IE "PLMN identity" within variable SELECTED\_PLMN has the value "GSM-MAP", the UE shall:

- delete any NAS system information received in connected mode;
- acquire the NAS system information in system information block type 1; and
- proceed according to subclause 8.6.1.2.

When entering idle mode, the UE shall:

- if the USIM is present:
  - store the current START value for every CN domain in the USIM [50];
  - if the "START" stored in the USIM [50] for a CN domain is greater than the value "THRESHOLD" of the variable START\_THRESHOLD:
    - delete the ciphering and integrity keys that are stored in the USIM for that CN domain;
    - inform the deletion of these keys to upper layers.

## 13.4 UE variables

### 13.4.0 CELL INFO LIST

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

The first position in Intra-frequency cell info list corresponds to Intra-frequency cell id 0, the second to Intra-frequency cell id 1, etc.

The first position in Inter-frequency cell info list corresponds to Inter-frequency cell id 0, the second to Inter-frequency cell id 1, etc.

The first position in Inter-RAT cell info list corresponds to Intra-frequency cell id 0, the second to Inter-RAT cell id 1, etc.

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

NOTE: This IE shall be cleared when entering UTRA RRC connected mode, when **leaving UTRA RRC connected mode**, when switched off as well as at selection of a new PLMN.

#### 13.4.00 CELL\_POSITION

This variable stores the CELL\_POSITION for UE-based OTDOA (10.3.7.106).

All IEs in this variable shall be cleared when switched off and as well as at selection of a new PLMN and when leaving UTRA RRC connected mode to another RAT.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Relative North	OP		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference cell.
Relative East	OP		Integer(-20000..20000)	Seconds, scale factor 0.03. Relative position compared to reference cell.
Relative Altitude	OP		Integer(-4000..4000)	Relative altitude in meters compared to ref. cell.

### 13.4.0a CELL\_UPDATE\_STARTED

This variable indicates whether a cell update or URA update procedure is in progress.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell update started	MP		Boolean	TRUE means a cell or URA update procedure is in progress. Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.1 CIPHERING\_STATUS

This variable contains information about the current status of ciphering in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Status	MP		Enumerated(Not started, Started)	Set to "Not started" when entering UTRA RRC connected mode. Set to "Not started" when leaving UTRA RRC connected mode.
Reconfiguration	MP		Boolean	TRUE means an RRC procedure performing reconfiguration of ciphering is ongoing. Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.2 Void

#### 13.4.2a CONFIGURATION\_INCOMPLETE

This variable indicates whether a received measurement control message contains invalid an incomplete measurement configuration.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Configuration incomplete	MP		Boolean	TRUE: An incomplete configuration has been detected Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.3 C\_RNTI

This variable stores the assigned C-RNTI for this UE when in CELL\_FACH state.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
C-RNTI	OP		C-RNTI 10.3.3.8	Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure. Cleared when leaving UTRA RRC connected mode.

### 13.4.4 DOFF

This variable contains the default offset value in the UE. See [10] for details.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Default DPCH Offset Value (DOFF)	OP		Default DPCH Offset Value, 10.3.6.16	Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure. Cleared when leaving UTRA RRC connected mode.

### 13.4.5 ESTABLISHED\_RABS

This variable is used to store information about the established radio access bearers and signalling radio bearers in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RAB information	OP	1 to <maxRABset up>		For each RAB established <u>Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
>RAB info	MP		RAB info 10.3.4.8	
>RB information	MP	1 to <maxRBper RAB>		For each RB belonging to the RAB
>>RB identity	MP		RB identity 10.3.4.16	
>>Subflow	MP		Integer(0..<maxSubflowcount>)	Reference to the RAB subflow implemented by this RB
>>RB started	MD		Enumerated(stopped, started)	Default value is started
Signalling radio bearer information	OP	1 to <maxSRBset up>		In the order of RB0 and upwards <u>Cleared when leaving UTRA RRC connected mode.</u>
>RB started	MD		Enumerated(stopped, started)	Default value is started

### 13.4.5a ESTABLISHED\_SIGNALLING\_CONNECTIONS

This variable is used to store information about established signalling connections.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Signalling connection list	OP	1 to <maxCNdomains>		For each established signalling connection <u>Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
>Signalling connection identity	MP		CN domain identity 10.3.1.1	

### 13.4.6 ESTABLISHMENT\_CAUSE

This variable is used to store the cause for establishment of a signalling connection received by upper layers, to be used at RRC connection establishment.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Establishment cause	OP		Establishment cause 10.3.3.11	Cleared when <b>leaving UTRA RRC connected mode.</b>

### 13.4.7 FAILURE\_CAUSE

This variable contains the cause for failure of a UE initiated procedure, to be reported in a retransmitted message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure cause	OP		Failure cause 10.3.3.13	Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>

### 13.4.8 FAILURE\_INDICATOR

This variable indicates whether the procedure has failed for a UE initiated procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Failure indicator	MP		Boolean	TRUE: Procedure has failed Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when <b>leaving UTRA RRC connected mode.</b>

### 13.4.8a INCOMPATIBLE\_SECURITY\_RECONFIGURATION

This variable indicates whether an incompatible simultaneous reconfiguration of a security function has been received.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Incompatible security reconfiguration	MP		Boolean	TRUE: An incompatible simultaneous security reconfiguration has been detected Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when <b>leaving UTRA RRC connected mode.</b>

### 13.4.9 INITIAL\_UE\_IDENTITY

In this variable the identity used by the UE when establishing an RRC connection is stored.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Initial UE identity	OP		Initial UE identity 10.3.3.15	Cleared when <b>leaving UTRA RRC connected mode.</b>

### 13.4.9a INTEGRITY\_PROTECTION\_ACTIVATION\_INFO

This variable contains information to be sent to UTRAN about when a new integrity protection configuration shall be activated in the uplink for signalling radio bearers in case of modification of integrity protection.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink Integrity protection activation info	OP		Integrity protection activation info 10.3.3.17	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.10 INTEGRITY\_PROTECTION\_INFO

This variable contains information about the current status of the integrity protection in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Historical status	MP		Enumerated (Never been active, Has been active)	Set to "Never been active" when entering UTRA RRC connected mode.
Status	MP		Enumerated (Not started, Started)	Set to "Not started" when entering UTRA RRC connected mode. Set to "Not started" when leaving UTRA RRC connected mode.
Reconfiguration	MP		Boolean	TRUE means a reconfiguration of integrity protection is ongoing. Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.
Signalling radio bearer specific integrity protection information	MPOP	1 to <maxSRBsetup>		When integrity protection is started, sStatus information for RB0- RB4 in that order. Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.
>Uplink RRC HFN	MP		Bitstring (28)	
>Downlink RRC HFN	MP		Bitstring (28)	
>Uplink RRC Message sequence number	MP		Integer (0..15)	
>Downlink RRC Message sequence number	OP		Integer (0..15)	

### 13.4.11 INVALID\_CONFIGURATION

This variable indicates whether a received message contained an invalid configuration, by means of invalid values or invalid combinations of information elements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Invalid configuration	MP		Boolean	TRUE: An invalid configuration has been detected Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.11a LATEST\_CONFIGURED\_CN\_DOMAIN

This variable stores the CN-domain that was most recently configured to be used for ciphering and integrity protection.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Latest configured CN domain	OP		CN domain identity 10.3.1.1	Cleared when entering UTRA RRC connected mode when not stated otherwise in the procedure. Cleared when leaving UTRA RRC connected mode.

### 13.4.12 MEASUREMENT\_IDENTITY

This variable stores the measurements configured in the UE. For each configured measurement, the information below shall be stored.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MEASUREMENT CONTROL	OP		MEASUREMENT CONTROL 10.2.17, System Information Block type 11 10.2.48.8.1 2, System Information Block type 12 10.2.48.8.1 3	Information as contained in these messages. Cleared when entering UTRA RRC connected mode when not stated otherwise in the procedure (8.4.1.8-8.4.1.9). Cleared when leaving UTRA RRC connected mode when not stated otherwise in the procedure (8.4.1.9a).

### 13.4.13 Void

### 13.4.14 ORDERED\_RECONFIGURATION

This variable stores information about an ongoing Reconfiguration procedure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Ordered reconfiguration	MP		Boolean	TRUE means that a Reconfiguration procedure is ongoing. Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.15 PDCP\_SN\_INFO

This variable contains PDCP receive sequence numbers for one or several radio bearers to be included in a response message to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB with PDCP information list	OP	1 to <maxRBall RABs>		Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.
>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	

### 13.4.16 PROTOCOL\_ERROR\_INDICATOR

This variable indicates whether there exist a protocol error that is to be reported to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error indicator	MP		Protocol error indicator 10.3.3.27	Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.17 PROTOCOL\_ERROR\_INFORMATION

This variable contains diagnostics to be reported to UTRAN for a message that was not completely understood.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error information	OP		Protocol error information 10.3.8.12	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.18 PROTOCOL\_ERROR\_REJECT

This variable indicates whether there has occurred a severe protocol error causing the ongoing procedure to fail.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Protocol error reject	MP		Boolean	TRUE: a severe protocol error has occurred Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.19 RB\_TIMER\_INDICATOR

This variable contains information to be sent to UTRAN if any of the timers T314 or T315 has expired when the UE sends a cell update with cause RL failure.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB timer indicator	OP		RB timer indicator 10.3.3.28	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.20 RB\_UPLINK\_CIPHERING\_ACTIVATION\_TIME\_INFO

This variable contains information to be sent to UTRAN about when a new ciphering configuration shall be activated in the uplink for radio bearers using RLC-AM or RLC-UM.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB uplink ciphering activation time info	OP		RB activation time info 10.3.4.13	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.21 SELECTED\_PLMN

This variable contains the type of and identity of the selected PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PLMN Type	MP		PLMN Type 10.3.1.12	
CHOICE <i>identity type</i> >PLMN identity	MP		PLMN identity 10.3.1.11	
>SID			SID 10.3.9.11	

CHOICE <i>identity type</i>	Condition under which the given <i>identity type</i> is chosen
PLMN identity	PLMN Type is "GSM-MAP"
SID	PLMN Type is "ANSI-41"

### 13.4.22 START\_THRESHOLD

This variable contains information about the maximum allowed value of the START for a CN domain.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
THRESHOLD	OP		Integer (0..1048576)	20 bits Cleared when entering UTRA RRC connected mode when not stated otherwise in the procedure. Cleared when leaving UTRA RRC connected mode.

### 13.4.23 START\_VALUE\_TO\_TRANSMIT

This variable contains the value of START for new radio bearer(s) to be transmitted in a response message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
START	OP		START 10.3.3.38	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.24 TFC\_SUBSET

This variable contains information about the TFC subset currently applied.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>mode</i>	MP			
>FDD				
>>Current TFC subset	MP		Transport Format Combination Subset 10.3.5.22	<u>Set to “Full transport format set” when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u>
>>Duration	OP		TFC Control duration 10.3.6.80	<u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>
>>Default TFC subset	OP		Transport Format Combination Subset 10.3.5.22	The TFC subset to go back to when any temporary limitation is released <u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>
>TDD				
>>TFCS list	MP	1 to < maxCCTrC H >		<u>One TFCS is created when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u>
>>>TFCS identity	MP		<u>Transport Format Combination Set Identity 10.3.5.21</u>	<u>“TFCS ID” is set to 1 when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u> <u>“Shared channel indicator” is set to FALSE when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u>
>>>>Current TFC subset	MP		Transport Format Combination Subset 10.3.5.22	<u>Set to “Full transport format set” when entering UTRA RRC connected mode when not stated otherwise in the procedure.</u>
>>>>Duration	OP		TFC Control duration 10.3.6.80	<u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>
>>>>Default TFC subset	OP		Transport Format Combination Subset 10.3.5.22	The TFC subset to go back to when any temporary limitation is released <u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>

### 13.4.25 TGPS\_IDENTITY

This variable contains the configuration parameters of a compressed mode transmission gap pattern sequence

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TGPS_IDENTITY	OP		DPCH compressed mode info 10.3.6.33	Information as contained in the IE group "Transmission gap pattern sequence configuration parameters". <u>Cleared when entering UTRA RRC connected mode.</u> <u>Cleared when leaving UTRA RRC connected mode.</u>
TGPS Status Flag	MP		Enumerated( active, inactive)	This flag indicates the current status of the Transmission Gap Pattern Sequence

### 13.4.26 TGSN\_REPORTED

This variable specifies whether an IE "Proposed TGSN" was reported to the UTRAN

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Proposed TGSN reported	MP		Boolean	<u>Set to FALSE when entering UTRA RRC connected mode.</u> <u>Set to FALSE when leaving UTRA RRC connected mode.</u>

### 13.4.26a TIMERS\_AND\_CONSTANTS

This variable contains the values for all timers and constants used in connected mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE Timers and constants in connected mode	MD		UE Timers and constants in connected mode 10.3.3.43	Default value means that for all timers and constants - For parameters with need MD, the defaults specified in 10.3.3.43 apply and - For parameters with need OP, the parameters are absent <u>All parameters are set to the default value when leaving UTRA RRC connected mode to another RAT.</u>

### 13.4.27 TRANSACTIONS

This variable stores the identifications of the ongoing RRC procedure transactions.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Accepted transactions	OP	1 to <maxtrans actions>		Cleared when <b>leaving UTRA RRC connected mode.</b>
>Message type	MP		Message Type	
>RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	
Rejected transactions	OP	1 to <maxtrans actions>		Cleared when <b>leaving UTRA RRC connected mode.</b>
>Message type	MP		Message Type	
>RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36	

### 13.4.27a TRIGGERED\_1A\_EVENTS

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

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

### 13.4.27b TRIGGERED\_1B\_EVENTS

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to <maxCellMeas>		Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

### 13.4.27c TRIGGERED\_1C\_EVENTS

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



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMe as>		Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected</b> mode.
>primary CPICH	MP		Primary CPICH info 10.3.6.60	
>sent reports	MP		Integer(1..Infinity)	Number of reports sent to UTRAN in case of event triggered periodical reporting

### 13.4.27d BEST\_CELL\_1D\_EVENT

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Best cell	MPOP		Primary CPICH info 10.3.6.60	Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected</b> mode.

### 13.4.27e TRIGGERED\_1E\_EVENTS

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMe as>		Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected</b> mode.
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

### 13.4.27f TRIGGERED\_1F\_EVENTS

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cells triggered	OP	1 to < maxCellMe as>		Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected</b> mode.
>primary CPICH	MP		Primary CPICH info 10.3.6.60	

### 13.4.27g UE\_CAPABILITY\_REQUESTED

This variable stores information about the UE capabilities that have been requested by UTRAN but that have not yet been transferred to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE radio access capability	OP		UE radio access capability 10.3.3.42	Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>
UE radio access capability extension	OP		UE radio access capability extension 10.3.3.42a	Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>
UE system specific capability	OP	1 to <maxSystemCapability>	Inter-RAT UE radio access capability 10.3.8.7	Includes inter-RAT classmark Cleared when entering UTRA RRC connected mode. Cleared when <b>leaving UTRA RRC connected mode.</b>
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	

### 13.4.28 UE\_CAPABILITY\_TRANSFERRED

This variable stores information about which UE capabilities that have been transferred to UTRAN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE radio access capability	OP		UE radio access capability 10.3.3.42	Cleared when entering UTRA RRC connected mode when <u>not stated otherwise in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
UE radio access capability extension	OP		UE radio access capability extension 10.3.3.42a	Cleared when entering UTRA RRC connected mode when <u>not stated otherwise in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
UE system specific capability	OP	1 to <maxSystemCapability>	Inter-RAT UE radio access capability 10.3.8.7	Includes inter-RAT classmark Cleared when entering UTRA RRC connected mode when <u>not stated otherwise in the procedure.</u> Cleared when <b>leaving UTRA RRC connected mode.</b>
>Inter-RAT UE radio access capability	MP		Inter-RAT UE radio access capability 10.3.8.7	

### 13.4.29 UNSUPPORTED\_CONFIGURATION

This variable indicates whether a received message contained a configuration that is not supported by the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Unsupported configuration	MP		Boolean	TRUE: An unsupported configuration has been detected Set to FALSE when entering UTRA RRC connected mode. Set to FALSE when leaving UTRA RRC connected mode.

### 13.4.30 URA\_IDENTITY

This variable stores the assigned URA identity for this UE when in URA\_PCH state.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
URA identity	OP		URA identity 10.3.2.6	Cleared when entering UTRA RRC connected mode. Cleared when leaving UTRA RRC connected mode.

### 13.4.31 U\_RNTI

This variable stores the assigned U-RNTI for this UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
U-RNTI	MPOP		U-RNTI 10.3.3.47	Cleared when leaving UTRA RRC connected mode.

### 13.4.32 VALUE\_TAG

This variable contains information about the value tag for the last received system information block of a given type, for all system information blocks using value tags. The UE shall maintain one instance of this variable for the current selected cell. The UE may store several store several instances of this variable, one for each cell, to be used if the UE returns to these cells.

All IEs in this variable shall be cleared when switched off and as well as at selection of a new PLMN.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
MIB value tag	<u>MPOP</u>		MIB value tag 10.3.8.9	Value tag for the master information block
SB 1 value tag	<u>MPOP</u>		Cell value tag 10.3.8.4	Value tag for the scheduling block type 1
SB 2 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the scheduling block type 2
SIB 1 value tag	<i>CV-GSM</i>		PLMN value tag 10.3.8.10	Value tag for the system information block type 1
SIB 2 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 2
SIB 3 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 3
SIB 4 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 4
SIB 5 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 5
SIB 6 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 6
<i>CHOICE mode</i>	<u>MP</u>			
>FDD				
>>SIB 8 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 8
>TDD				(no data)
SIB 11 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 11
SIB 12 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 12
SIB 13 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13
SIB 13.1 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13.1
SIB 13.2 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13.2
SIB 13.3 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13.3
SIB 13.4 value tag	<i>CV-ANSI</i>		Cell value tag 10.3.8.4	Value tag for the system information block type 13.4
SIB 15 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 15
SIB 15.1 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 15.1
<u>SIB 15.2 value tag list</u>	<u>OP</u>	1 to <maxSat >		List of value tags for all stored occurrences of system information block type 15.2
≥SIB 15.2 value tag	<u>MP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 15.2
>SIB occurrence identity and value tag	<u>MP</u>		<u>SIB occurrence identity and value tag 10.3.8.20b</u>	
<u>SIB 15.2 value tag list</u>	<u>OP</u>	1 to <maxSat >		List of value tags for all stored occurrences of system information block type 15.2
≥SIB 15.3 value tag	<u>MP</u>		PLMN value tag 10.3.8.10	Value tag for the system information block type 15.3
>SIB occurrence identity and value tag	<u>MP</u>		<u>SIB occurrence identity and value tag 10.3.8.20b</u>	
SIB 15.4 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 15.4
SIB 16 value tag list	<u>OPMP</u>	1 to <maxPre defConfig >	PLMN value tag 10.3.8.10	List of value tags for all stored occurrences of the system information block type 16

>Predefined configuration identity and value tag	<u>MP</u>		Predefined configuration identity and value tag 10.3.8.11	
SIB 18 value tag	<u>OPMP</u>		Cell value tag 10.3.8.4	Value tag for the system information block type 18

Condition	Explanation
<i>GSM</i>	This information is <del>only stored</del> <u>optional</u> when the PLMN Type in the variable SELECTED_PLMN is "GSM-MAP" <u>and never stored otherwise.</u>
<i>ANSI</i>	This information is <del>only stored</del> <u>optional</u> when the PLMN Type in the variable SELECTED_PLMN is "ANSI-41" <u>and never stored otherwise.</u>

## CHANGE REQUEST

CR-Form-v4

⌘ **25.331 CR 921** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Inter-frequency measurement corrections		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 2001-08-29
<b>Category:</b>	⌘ <b>F</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>Release:</b>	⌘ <b>R99</b> Use <u>one</u> of the following releases: <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

**Reason for change:** ⌘ The description of the 2x events is not complete and the way the virtual active sets are initiated and updated as well as the way the virtual active set updates are reported is not specified at all.  
A strict description of the events and of the way the UE shall behave regarding the virtual active sets is needed in order to avoid ambiguities, and for inter-frequency measurements to be usable.

**Summary of change:** ⌘ The original CR R2-011835 was merged with CR R2-011859, and updated according to the received comments. A part in section 14.2.0b was removed compared to the original version, as well as a clause in section 10.3.7.19 (to avoid a non-backward compatible change to ASN.1) and the other updated parts are marked in yellow.  
Changes marked in green are sections from R2-012105.

1. In section 8.6.7.9, if the choice “Report all virtual active set cells + cells within monitored set on non-used frequency” is used, it is proposed that the “Maximum number of reported cells” applies per frequency. For instance, two frequencies f1 and f2 have triggered the same event at the same time, and if the “Maximum number of reported cells” is set to 1, the report shall contain all virtual active set cells on f1, 1 monitored cells on f1 (at most), all virtual active set cells on f2 and 1 monitored cells on f2 (at most).
2. In section 8.6.7.14, if the “inter-frequency set update” is not received at measurement set-up, the UE shall set the variable CONFIGURATION\_INCOMPLETE to TRUE. In case the “UE autonomous update mode” is set to “On” or “Off”, only one non-used frequency can be concerned by the inter-frequency measurement, since the frequency is not included in the Inter-frequency set update (10.3.7.22) for adding or removing radio links.
3. Inter-frequency measurement reporting criteria (10.3.7.19): the threshold is not

necessary in case event 2a is used, while W is needed. Two clauses were added to make that clear.

4. Inter-frequency reporting quantity (10.3.7.21): it is added that for R99, the only valid value of the IE “Frequency quality estimate” in “Inter-frequency reporting quantity” is FALSE, since this cannot be reported anywhere.
5. Intra-frequency measurement reporting criteria (10.3.7.39): it is clarified that in the case of intra-frequency events triggered for the update of virtual active sets in an event based inter-frequency measurement, only one rapport shall be sent, and no periodical reporting shall be used. The two IEs “Amount of reporting” and “Reporting interval” are thus not needed in the case this IE is included in the IE “Inter-frequency measurement”.
6. Reporting cell status (10.3.7.61): the use of the active set/virtual active set terminology is not consistent and a correction is proposed. Also, it is clarified that in certain cases, the “Maximum number of reported cells” shall apply per reported non-used frequency.
7. Section 11.3: the naming in ASN.1 was aligned to what exist in the tabular.
8. Sections 13.4.xx: new variables are added that are used in the description of the 2x events.
9. Sections 14.2.0a, 14.2.0b, 14.2.0c: the measurement quantities, frequency quality estimate and reporting quantities for inter-frequency measurements are clarified. In 14.2.0b, the “carrier j” index used has been changed to “frequency j” to make it consistent with the text that follows.
10. Sections 14.2.1.1 to 14.2.1.6: event descriptions of the same order as the ones existing for the intra-frequency events are added.
11. Section 14.11: a description of the way the virtual active sets shall be initiated and updated, and of the way the updates shall be reported to UTRAN is added. Due to the fact that in the IE “inter-frequency measurement” (10.3.7.16), only one of the two IEs: “inter-frequency measurement reporting criteria” and “intra-frequency measurement reporting criteria” can be included, it is proposed that the intra-frequency measurement reporting criteria defined in other measurements of type “intra-frequency” can be used. If no intra-frequency measurements are defined for the used frequency neither, then all the cells considered in the measurement on each non-used frequency shall be included in the active set. That avoids two MEASUREMENT CONTROL messages being needed to set up an event-based inter-frequency measurement.

This CR has isolated impact on inter-frequency measurement reporting.

**Consequences if not approved:** ⌘ No clear description of the way inter-frequency measurements work, which would mean that a consistent UE behaviour cannot be guaranted.

**Clauses affected:** ⌘ 8.6.7.14, 10.3.7.19, 10.3.7.21, 10.3.7.22, 10.3.7.38, 10.3.7.39, 10.3.7.61, 11.3, 13.4.27f4 (new), 13.4.27f5 (new), 13.4.27f6 (new), 13.4.27f7 (new), 13.4.27f8 (new), 13.4.27f9 (new), 14.2, 14.2.0a (new), 14.2.0b (new), 14.2.0c (new), 14.2.1, 14.2.1.1, 14.2.1.2, 14.2.1.3, 14.2.1.4, 14.2.1.5, 14.2.1.6, 14.11, 14.11.1 (new), 14.11.2 (new)

**Other specs affected:** ⌘  Other core specifications ⌘ 25.331 v4.1.0, CR 922  
 Test specifications  
 O&M Specifications

**Other comments:** ⌘

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at:  
[http://www.3gpp.org/3G\\_Specs/CRs.htm](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.



### 8.6.7.14 Inter-frequency measurement

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

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT\_IDENTITY;
- set the variable CONFIGURATION\_INCOMPLETE to TRUE.

**- In the case of an inter-frequency measurement for FDD:**

- If IE "Inter-frequency measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", if an inter-frequency event is configured that is different from event 2d or 2f, and if the IE "Inter-frequency SET UPDATE" is not received in that same message:

- set the variable CONFIGURATION\_INCOMPLETE to TRUE.

- If the IE "Inter-frequency SET UPDATE" is received:

- if the value of the IE "Autonomous Set Update" set to "Off" or "On":
  - if more than one frequency is included in the list of cells pointed at in the IE "cells for measurement" if also included in the same IE "Inter-frequency measurement", or otherwise included in the "Inter-frequency cell info" part of the variable CELL\_INFO\_LIST:
    - the UE shall set the variable INVALID\_CONFIGURATION to TRUE.

**If the variable CONFIGURATION\_INCOMPLETE is set to TRUE the UE shall act as described in subclause 8.4.1.4a.**

### 10.3.7.19 Inter-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an inter-frequency measurements. All events concerning inter-frequency measurements are labelled 2x where x is a,b,c..

Event 2a: Change of best frequency.

Event 2b: The estimated quality of the currently used frequency is below a certain threshold **and** the estimated quality of a non-used frequency is above a certain threshold.

Event 2c: The estimated quality of a non-used frequency is above a certain threshold.

Event 2d: The estimated quality of the currently used frequency is below a certain threshold.

Event 2e: The estimated quality of a non-used frequency is below a certain threshold.

Event 2f: The estimated quality of the currently used frequency is above a certain threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeas Event>		
>Inter-frequency event identity	MP		Inter-frequency event identity 10.3.7.14	
>Threshold used frequency	CV – clause 0		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm
>W used frequency	CV – clause 02		Real(0, 0.1..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0, 0.5..14.5 by step of 0.5)	In event 2a, 2b, 2c, 2d, 2e, 2f
>Time to trigger	MP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms.
>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>Parameters required for each non-used frequency	OP	1 to <maxFreq >		
>>Threshold non used frequency	CV – clause 1		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm <b>This IE is not needed if “inter-frequency event identity” is set to 2a. However, it is specified to be mandatory to align with the ASN.1</b>
>>W non-used frequency	CV-clause 1		Real(0, 0.1..2.0 by step of 0.1)	

Condition	Explanation
Clause 0	<a href="#">The IE is mandatory if "inter-frequency event identity" is set to 2a, 2b, 2d, or 2f, otherwise the IE is not needed.</a>
Clause 1	The IE is mandatory <del>in</del> -if "inter-frequency event identity" is set to 2a, 2b, 2c or 2e, otherwise the IE is not needed.
<a href="#">Clause 2</a>	<a href="#">The IE is mandatory if "inter-frequency event identity" is set to 2a, 2b, 2d or 2f, otherwise the IE is not needed.</a>

### 10.3.7.21 Inter-frequency reporting quantity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UTRA Carrier RSSI	MP		Boolean	TRUE means report is requested
Frequency quality estimate	MP		Boolean	TRUE means that report is requested. <a href="#">This parameter is not used in this release and should be set to FALSE. It shall be ignored by the UE.</a>
Non frequency related cell reporting quantities	MP		Cell reporting quantities 10.3.7.5	

### 10.3.7.22 Inter-frequency SET UPDATE

NOTE: Only for FDD.

Contains the changes of the [virtual](#) active set associated with a non-used frequency. This information makes it possible to use events defined for Intra-frequency measurement within the same non-used frequency for Inter-frequency measurement reporting criteria. This information also controls if the UE should use autonomous updating of the [virtual](#) active set associated with a non-used frequency.

Information Element/group name	Need	Multi	Type and reference	Semantics description
UE autonomous update mode	MP		Enumerated (On, On with no reporting, Off)	
Non autonomous update mode	<i>CV-Update</i>			
>Radio link addition information	OP	1 to <maxRL>		Radio link addition information required for each RL to add
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Note 1
>Radio link removal information	OP	1 to <MaxRL>		Radio link removal information required for each RL to remove
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Note 1

Condition	Explanation
Update	The IE is mandatory if IE "UE autonomous update mode" is set to "Off", otherwise the IE is not needed.

NOTE 1: If it is assumed that CPICH downlink scrambling code is always allocated with sufficient reuse distances, CPICH downlink scrambling code will be enough for designating the different radio links.

### 10.3.7.38 Intra-frequency measurement quantity

The quantity the UE shall measure in case of intra-frequency measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Filter coefficient	MP		Filter coefficient 10.3.7.9	
CHOICE mode	MP			
>FDD				
>>Measurement quantity	MP		Enumerated(C PICH Ec/N0, CPICH RSCP, Pathloss, UTRA Carrier RSSI)	If used in Inter system measurement quantity only Ec/N0 and RSCP <del>is</del> <u>are</u> allowed. If used in inter-frequency measurement quantity RSSI is not allowed.
>TDD				
>>Measurement quantity list	MP	1 to 4		
>>>Measurement quantity	MP		Enumerated(Primary CCPCH RSCP, Pathloss, Timeslot ISCP, UTRA Carrier RSSI)	If used in inter-frequency measurement quantity RSSI is not allowed.

### 10.3.7.39 Intra-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an intra-frequency measurement. All events concerning intra-frequency measurements are labelled 1x where x is a, b, c,....

Event 1a: A Primary CPICH enters the Reporting Range (FDD only).

Event 1b: A Primary CPICH leaves the Reporting Range (FDD only).

Event 1c: A Non-active Primary CPICH becomes better than an active Primary CPICH (FDD only).

Event 1d: Change of best cell [Note 1] (FDD only).

Event 1e: A Primary CPICH becomes better than an absolute threshold (FDD only).

Event 1f: A Primary CPICH becomes worse than an absolute threshold (FDD only).

Event 1g: Change of best cell in TDD.

Event 1h: Timeslot ISCP below a certain threshold (TDD only).

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

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

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

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

### 10.3.7.61 Reporting Cell Status

Indicates maximum allowed number of cells to report and whether active set cells and/or virtual active set cells and/or monitored set cells on and/or detected set cells used frequency and/or monitored set cells on non used frequency should/should not be included in the IE "Measured results".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>reported cell</i>	MP			
>Report cells within active set				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set cells on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within active set and/or monitored set cells on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set and/or detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report all active set cells + cells within monitored set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within monitored set and/or detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	

>Report cells within virtual active set				
>>Maximum number of reported cells <u>per reported non-used frequency</u>	MP		Integer(1..6)	
>Report cells within monitored set on non-used frequency				
>>Maximum number of reported cells <u>per reported non-used frequency</u>	MP		Integer(1..6)	
>Report cells within monitored and/or <u>virtual</u> active set on non-used frequency				
>>Maximum number of reported cells <u>per reported non-used frequency</u>	MP		Integer(1..6)	
>Report all virtual active set cells + cells within monitored set on non-used frequency				
>>Maximum number of reported cells <u>per reported non-used frequency</u>	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report cells within active set or within virtual active set				
>>Maximum number of reported cells	MP		Integer (1..12)	
>Report cells within active and/or monitored set on used frequency or within <u>virtual</u> active and/or monitored set on non-used frequency				
>>Maximum number of reported cells	MP		Integer(1..12)	

## 11 Message and Information element abstract syntax (with ASN.1)

< \*\*\* Unecessary Definitions Removed \*\*\* >

### 11.3 Information element definitions

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

Event2a ::=
    usedFreqThresholddummy SEQUENCE {
        Threshold,
        -- IE "dummy" shall not be sent and shall be ignored if received.
```



```

-- IE "dummy" should be removed in later versions of the message including this IE

usedFreqW                W,
hysteresis                HysteresisInterFreq,
timeToTrigger            TimeToTrigger,
reportingCellStatus      ReportingCellStatus          OPTIONAL,
nonUsedFreqParameterList NonUsedFreqParameterList    OPTIONAL
}

MaxNumberOfReportingCellsType1 ::= ENUMERATED {
    e1, e2, e3, e4, e5, e6}

MaxNumberOfReportingCellsType2 ::= ENUMERATED {
    e1, e2, e3, e4, e5, e6, e7, e8, e9, e10, e11,
    e12}

MaxNumberOfReportingCellsType3 ::= ENUMERATED {
    viactCellsPlus1,
    viactCellsPlus2,
    viactCellsPlus3,
    viactCellsPlus4,
    viactCellsPlus5,
    viactCellsPlus6 }

NonUsedFreqParameter ::= SEQUENCE {
    nonUsedFreqThreshold Threshold,
    -- IE "nonUsedFreqThreshold" is not needed in case of event 2a
    -- In case of event 2a UTRAN should include value 0 within IE "nonUsedFreqThreshold"
    -- In case of event 2a, the UE shall be ignore IE "nonUsedFreqThreshold"
    -- In later versions of the message including this IE, a special version of
    -- IE "NonUsedFreqParameterList" may be defined for event 2a, namely a
    -- version not including IE "nonUsedFreqThreshold"
    nonUsedFreqW                W
}

ReportingCellStatus ::= CHOICE{
    withinActiveSet                MaxNumberOfReportingCellsType1,
    withinMonitoredSetUsedFreq      MaxNumberOfReportingCellsType1,
    withinActiveAndOrMonitoredUsedFreq MaxNumberOfReportingCellsType1,
    withinDetectedSetUsedFreq      MaxNumberOfReportingCellsType1,
    withinMonitoredAndOrDetectedUsedFreq
                                MaxNumberOfReportingCellsType1,
    allActiveplusMonitoredSet      MaxNumberOfReportingCellsType3,
    allActivePlusDetectedSet      MaxNumberOfReportingCellsType3,
    allActivePlusMonitoredAndOrDetectedSet
                                MaxNumberOfReportingCellsType3,
    withinVirtualActSet            MaxNumberOfReportingCellsType1,
    withinMonitoredSetNonUsedFreq  MaxNumberOfReportingCellsType1,
    withinMonitoredAndOrVirtualActSetNonUsedFreq
                                MaxNumberOfReportingCellsType1,
    allVirtualActSetplusMonitoredSetNonUsedFreq
                                MaxNumberOfReportingCellsType3,
    withinActSetOrVirtualActSet    MaxNumberOfReportingCellsType2,
    withinActSetAndOrMonitoredUsedFreqOrVirtualActSetAndOrMonitoredNonUsedFreq
                                MaxNumberOfReportingCellsType2
}

```

### 13.4.27f4 BEST FREQUENCY 2A EVENT

This variable contains information about a 2a event that has been configured in the UE. There is one such variable per 2a event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Best frequency</u>	<u>MP</u>		<u>Frequency info</u> <u>10.3.6.36</u>	

### 13.4.27f5 TRIGGERED 2B EVENT

This variable contains information about a 2b event that has been configured in the UE. There is one such variable per 2b event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Frequency triggered</u>	<u>OP</u>	<u>1 to &lt; maxCellMeas&gt;</u>		
<u>&gt;Frequency</u>	<u>MP</u>	<u>Frequency info</u> <u>10.3.6.36</u>		

### 13.4.27f6 TRIGGERED 2C EVENT

This variable contains information about a 2c event that has been configured in the UE. There is one such variable per 2c event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Frequency triggered</u>	<u>OP</u>	<u>1 to &lt; maxCellMeas&gt;</u>		
<u>&gt;Frequency</u>	<u>MP</u>	<u>Frequency info</u> <u>10.3.6.36</u>		

### 13.4.27f7 TRIGGERED 2D EVENT

This variable contains information about a 2d event that has been configured in the UE. There is one such variable per 2d event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Event triggered</u>	<u>OP</u>		<u>Boolean</u>	

### 13.4.27f8 TRIGGERED 2E EVENT

This variable contains information about a 2e event that has been configured in the UE. There is one such variable per 2e event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Frequency triggered</u>	<u>OP</u>	<u>1 to &lt;maxCellMeas&gt;</u>		
<u>&gt;Frequency</u>	<u>MP</u>	<u>Frequency info</u> <u>10.3.6.36</u>		

## 13.4.27f9 TRIGGERED 2F EVENT

This variable contains information about a 2f event that have been configured in the UE. There is one such variable per 2f event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Event triggered</u>	<u>OP</u>		<u>Boolean</u>	

## 14.2 Inter-frequency measurements

### 14.2.0a Inter-frequency measurement quantities

The two first measurement quantities listed below are used by the UE to evaluate whether an inter-frequency measurement event has occurred or not, through the computation of a frequency quality estimate. Which quantity to use to compute the frequency quality estimate for an inter-frequency measurement is given in the "Inter-frequency measurement quantity" stored for that measurement. In the FDD case, all three measurement quantities can be used for the update of the virtual active set of the non-used frequencies as described in section 14.11.

1. Downlink Ec/No
2. Downlink received signal code power (RSCP) after despreading.
3. Downlink path loss.

For FDD:

Pathloss in dB = Primary CPICH Tx power - CPICH RSCP.

For Primary CPICH Tx power the IE "Primary CPICH Tx power" shall be used. The unit is dBm.

CPICH RSCP is the result of the CPICH RSCP measurement. The unit is dBm.

A description of those values can be found in [7] and [8].

### 14.2.0b Frequency quality estimate

For FDD cell:

The frequency quality estimate used in events 2a, 2b, 2c, 2d, ~~and~~ 2e and 2f is defined as:

$$Q_{frequency\ j} = 10 \cdot \text{Log}M_{frequency\ j} = W_j \cdot 10 \cdot \text{Log} \left( \sum_{i=1}^{N_{A_j}} M_{i\ j} \right) + (1 - W_j) \cdot 10 \cdot \text{Log}M_{Best\ j},$$

The variables in the formula are defined as follows: (“the virtual active set on frequency j” should be understood as the active set if frequency j is the used frequency. If frequency j is a non-used frequency, the way the virtual active set is initiated and updated is described in section 14.11)

$Q_{frequency\ j}$  is the estimated quality of the virtual active set on frequency j.

$M_{frequency\ j}$  is the estimated quality of the virtual active set on frequency j.

$M_{i\ j}$  is a measurement result of cell i in the virtual active set on frequency j.

$N_{A_j}$  is the number of cells in the virtual active set on frequency j.

$M_{Best\ j}$  is the measurement result of the cell in the virtual active set on frequency j with the highest measurement result.

$W_j$  is a parameter sent from UTRAN to UE and used for frequency j.

H is the hysteresis parameter.

If the measurement result is CPICH-Ec/No then  $M_{FrequencyNew}$ ,  $M_{i\ j}$  and  $M_{Best}$  are expressed as ratios.

If the measurement result is CPICH-RSCP or PCCPCH-RSCP then  $M_{FrequencyNew}$ ,  $M_{i\ j}$  and  $M_{Best}$  are expressed in [mW].

**For TDD cells:**

$$Q_{i, frequency\ j} = 10 \cdot \text{Log}M_{i, frequency\ j} + O_{i, j}$$

$Q_{i, frequency\ j}$  is the estimated quality of cell i on frequency j.

$M_{frequency\ j}$  is the measurement result for Primary CCPCH RSCP of cell i on frequency j expressed in [mW].

$O_{i, j}$  is the cell individual offset of the currently evaluated cell i on frequency j.  $O_{i, j}$  is set by IE “Cell individual offset”

### 14.2.0c Inter-frequency reporting quantities

The quantities that the UE shall report for each cell to UTRAN when the event is triggered for an inter-frequency measurement is given by the “Inter-frequency reporting quantity” IE stored for this measurement and can be the following, from 1 to 8. The quantity number 9 can be reported for each frequency that triggered the report.

1. Cell identity
2. SFN-SFN observed time difference
3. Cell synchronisation information
4. Downlink Ec/No (FDD)
5. Downlink path loss.

For FDD:

Pathloss in dB = Primary CPICH Tx power - CPICH RSCP.

For Primary CPICH Tx power the IE "Primary CPICH Tx power" shall be used. The unit is dBm.

CPICH RSCP is the result of the CPICH RSCP measurement. The unit is dBm.

For TDD:

Pathloss in dB = Primary CCPCH TX power - Primary CCPCH RSCP.

For Primary CCPCH TX power the IE "Primary CCPCH TX Power" shall be used. The unit is dBm.

Primary CCPCH RSCP is the result of the Primary CCPCH RSCP measurement. The unit is dBm.

If necessary Pathloss shall be rounded up to the next higher integer.

Results higher than 158 shall be reported as 158.

Results lower than 46 shall be reported as 46.

6. Downlink received signal code power (RSCP) after despreading (of a primary CPICH for FDD, and of a primary CCPCH for TDD).
7. ISCP measured on Timeslot basis. (TDD)
8. Proposed TGSN (TDD)
9. UTRA carrier RSSI

A description of those values can be found in [7] and [8].

## 14.2.1 Inter-frequency reporting events

Within the measurement reporting criteria field in the MEASUREMENT CONTROL message UTRAN notifies the UE which events should trigger the UE to send a MEASUREMENT REPORT message. ~~Examples of inter-frequency reporting events that would be useful for inter-frequency handover evaluation are given below. Note that normally the UEs do not need to report all these events.~~ The listed events are the toolbox from which the UTRAN can choose the reporting events that are needed for the implemented handover evaluation function, or other radio network functions.

All events are evaluated with respect to one of the measurement quantities given in subclause

~~14.2.0a+4.1.1. The measurement quantities are measured on the monitored primary common pilot channels (CPICH) in FDD mode and the monitored primary common control channels (PCCPCH) in TDD mode of the cell defined in the measurement object. The measurement objects are the monitored primary common pilot channels (CPICH) in FDD mode and the monitored primary common control channels (PCCPCH) in FDD mode.~~ A "non-used frequency" is a frequency that the UE has ~~ve~~ been ordered to measure upon but ~~isare~~ not used ~~for of~~ the ~~connection~~active-set. A "used frequency" is a frequency that the UE has ~~ve~~ been ordered to measure upon and is also currently used for the connection.

### 14.2.1.1 Event 2a: Change of best frequency.

When event 2a is configured in the UE within a measurement, the UE shall:

- When the measurement is initiated or resumed, store the used frequency in the variable BEST\_FREQUENCY\_2A\_EVENT
- If equation 1 below has been fulfilled during the time "Time to trigger" for a frequency included for that event and which is not stored in the variable BEST\_FREQUENCY\_2A\_EVENT:

- Send a measurement report with IEs set as below:
  - In “inter-frequency measurement event results”:
    - “inter-frequency event identity” to “2a”, and
    - “Frequency info” to the frequency that triggered the event and “Non frequency related measurement event results”
    - to the “Primary CPICH info” of the best primary CPICH for FDD cells
    - or
    - “Primary CCPCH info” to the “Cells parameters ID” of the best primary CCPCH for TDD cells
    - on that frequency;
  - “measured results” and possible “additional measured results” according to 8.4.2;
- Update the variable BEST FREQUENCY 2A EVENT with that frequency

Equation 1:

$$Q_{NotBest} \geq Q_{Best} + H_{2a} / 2$$

The variables in the formula are defined as follows:

$Q_{NotBest}$  is the quality estimate of a frequency not stored the “best frequency” in the variable BEST FREQUENCY 2A EVENT.

$Q_{Best}$  is the quality estimate of the frequency stored in “best frequency” in the variable BEST FREQUENCY 2A EVENT.

$H_{2a}$  is the hysteresis parameter for the event 2a in that measurement.

If any of the non-used frequencies quality estimate becomes better than the currently used frequency quality estimate, and event 2a has been ordered by UTRAN then this event shall trigger a report to be sent from the UE when the hysteresis and time to trigger conditions is fulfilled. The corresponding report contains (at least) the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency that triggered the event.

14.2.1.2 Event 2b: The estimated quality of the currently used frequency is below a certain threshold **and** the estimated quality of a non-used frequency is above a certain threshold.

When an inter-frequency measurement configuring event 2b is set up, the UE shall create a variable TRIGGERED 2B EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 2b is configured in the UE within a measurement, the UE shall:

- If equations 1 and 2 below have been fulfilled during the time “Time to Trigger” from the same instant, respectively for one or several non-used frequencies included for that event and for the used frequency:
- If any of those non-used frequency is not stored in the variable TRIGGERED 2B EVENT:

- Store the non-used frequencies that triggered the event and that were not previously stored in the variable TRIGGERED\_2B\_EVENT into that variable;
- Send a measurement report with IEs set as below:
  - In “inter-frequency measurement event results”:
    - “inter-frequency event identity” to “2b”, and
    - for each non-used frequency that triggered the event, beginning with the best frequency “Frequency info” to that non-used frequency and “Non frequency related measurement event results”
    - to the “Primary CPICH info” of the best primary CPICH for FDD cells
    - or
    - “Primary CCPCH info” to the “Cell parameters ID” of the best primary CCPCH for TDD cells
    - on that non-used frequency;
  - “measured results” and possible “additional measured results” according to 8.4.2;
- If equation 3 below is fulfilled for a non-used frequency stored in the variable TRIGGERED\_2B\_EVENT
- Remove that non-used frequency from the variable TRIGGERED\_2B\_EVENT;
- If equation 4 below is fulfilled for the used frequency:
- Clear the variable TRIGGERED\_2B\_EVENT;

Triggering conditions:

Equation 1:

$$Q_{Nonused} \geq T_{Nonusedb} + H_{2b}/2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency that becomes better than an absolute threshold.

$T_{Non used 2b}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

Equation 2:

$$Q_{Used} \leq T_{Usedb} - H_{2b}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used 2b}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

Leaving triggered state condition:

Equation 3:

$$Q_{Nonused} < T_{Nonusedb} - H_{2b}/2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency that is stored in the variable TRIGGERED\_2B\_EVENT.

$T_{Non used 2b}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

Equation 4:

$$Q_{Used} > T_{Used2b} + H_{2b}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used 2b}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of the currently used frequency is below the value of the IE "Threshold used frequency" and the estimated quality of a non-used frequency is above the value of the IE "Threshold non-used frequency" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency that triggered the event.

#### 14.2.1.3 Event 2c: The estimated quality of a non-used frequency is above a certain threshold

When an inter-frequency measurement configuring event 2c is set up, the UE shall create a variable TRIGGERED\_2C\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 2c is configured in the UE within a measurement, the UE shall:

- If equation 1 below has been fulfilled for one or several non-used frequencies included for that event during the time "Time to trigger":
- If any of those non-used frequencies is not stored in the variable TRIGGERED\_2C\_EVENT:
  - Store the non-used frequencies that triggered the event and that were not previously stored in the variable TRIGGERED\_2C\_EVENT into that variable;
  - Send a measurement report with IEs set as below:
    - In "inter-frequency measurement event results":
      - "inter-frequency event identity" to "2c", and
      - for each non-used frequency that triggered the event, beginning with the best frequency "Frequency info" to that non-used frequency and "Non frequency related measurement event results"



- to the “Primary CPICH info” of the best primary CPICH for FDD cells

or

- “Primary CCPCH info” to the “Cell parameters ID” of the best primary CCPCH for TDD cells

on that non-used frequency;

- If equation 2 below is fulfilled for a non-used frequency stored in the variable TRIGGERED\_2C\_EVENT:
- Remove that non-used frequency from the variable TRIGGERED\_2C\_EVENT;

Triggering condition:

Equation 1:

$$Q_{Nonused} \geq T_{Nonused2c} + H_{2c}/2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency that becomes better than an absolute threshold.

$T_{Non used 2c}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2c}$  is the hysteresis parameter for the event 2c.

Leaving triggered state condition:

Equation 2:

$$Q_{Nonused} < T_{Nonused2c} - H_{2c}/2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency stored in the variable TRIGGERED\_2C\_EVENT.

$T_{Non used 2c}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2c}$  is the hysteresis parameter for the event 2c.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of a non-used frequency is above the value of the IE “Threshold non-used frequency” and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency.

#### 14.2.1.4 Event 2d: The estimated quality of the currently used frequency is below a certain threshold

When an inter-frequency measurement configuring event 2d is set up, the UE shall create a variable TRIGGERED\_2D\_EVENT related to that measurement, which shall initially be set to FALSE. This variable shall be deleted when the measurement is released.

When event 2d is configured in the UE within a measurement, the UE shall:

- If equation 1 below has been fulfilled for the used frequency during the time “Time to trigger”:

- If the variable TRIGGERED\_2D\_EVENT is set to FALSE:
  - Set the variable TRIGGERED\_2D\_EVENT to TRUE;
  - Send a measurement report with IEs set as below:
    - In "inter-frequency event results": "inter-frequency event identity" to "2d" and no IE "Inter-frequency cells";
    - "measured results" and possible "additional measured results" according to 8.4.2;
- If the variable TRIGGERED\_2D\_EVENT is set to TRUE and if equation 2 is fulfilled for the used frequency:
  - Set the variable TRIGGERED\_2D\_EVENT to FALSE;

Triggering condition:

Equation 1:

$$Q_{Used} \leq T_{Used2d} - H_{2d}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used2d}$  is the absolute threshold that applies for the used frequency and event 2d.

$H_{2d}$  is the hysteresis parameter for the event 2d.

Leaving triggered state condition:

Equation 2:

$$Q_{Used} > T_{Used2d} + H_{2d}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used2d}$  is the absolute threshold that applies for the used frequency and event 2d.

$H_{2d}$  is the hysteresis parameter for the event 2d.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of the currently used frequency is below the value of the IE "Threshold used frequency" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the used frequency.

#### 14.2.1.5 Event 2e: The estimated quality of a non-used frequency is below a certain threshold

When an inter-frequency measurement configuring event 2e is set up, the UE shall create a variable TRIGGERED\_2E\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 2e is configured in the UE within a measurement, the UE shall:

- If equation 1 below has been fulfilled for one or several non-used frequencies included for that event during the time “Time to trigger”:
  - If any of those non-used frequencies is not stored in the variable TRIGGERED\_2E\_EVENT:
    - Store the non-used frequencies that triggered the event and that were not previously stored in the variable TRIGGERED\_2E\_EVENT into that variable;
    - Send a measurement report with IEs set as below:
      - In “inter-frequency measurement event results”:
        - “inter-frequency event identity” to “2e”, and
        - for each non-used frequency that triggered the event, beginning with the best frequency “Frequency info” to that non-used frequency and “Non frequency related measurement event results”
        - to the “Primary CPICH info” of the best primary CPICH for FDD cells
        - or
        - “Primary CCPCH info” to the “Cell parameters ID” of the best primary CCPCH for TDD cells
        - on that non-used frequency;
    - “measured results” and possible “additional measured results” according to 8.4.2;
- If equation 2 below is fulfilled for a non-used frequency stored in the variable TRIGGERED\_2E\_EVENT:
  - Remove that non-used frequency from the variable TRIGGERED\_2E\_EVENT;

Triggering condition:

Equation 1:

$$Q_{Nonused} \leq T_{Nonusede} - H_{2e} / 2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency that becomes worse than an absolute threshold.

$T_{Non used 2e}$  is the absolute threshold that applies for that non-used frequency for that event.

$H_{2e}$  is the hysteresis parameter for the event 2e.

Leaving triggered state condition:

Equation 2:

$$Q_{Nonused} > T_{Nonusede} + H_{2e} / 2$$

The variables in the formula are defined as follows:

$Q_{Non\ used}$  is the quality estimate of a non-used frequency stored in the variable TRIGGERED\_2E\_EVENT.

$T_{Non\ used\ 2e}$  is the absolute threshold that applies for that non-used frequency for that event.

$H_{2e}$  is the hysteresis parameter for the event 2e.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of a non-used frequency is below the value of the IE "Threshold non-used frequency" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency.

#### 14.2.1.6 Event 2f: The estimated quality of the currently used frequency is above a certain threshold

When an inter-frequency measurement configuring event 2f is set up, the UE shall create a variable TRIGGERED\_2F\_EVENT related to that measurement, which shall initially be set to FALSE. This variable shall be deleted when the measurement is released.

When event 2f is configured in the UE within a measurement, the UE shall:

- If equation 1 below has been fulfilled for the used frequency during the time "Time to trigger":
  - If the variable TRIGGERED\_2F\_EVENT is set to FALSE:
    - Set the variable TRIGGERED\_2F\_EVENT to TRUE;
    - Send a measurement report with IEs set as below:
      - In "inter-frequency event results": "inter-frequency event identity" to "2f", and no IE "Inter-frequency cells";
      - "measured results" and possible "additional measured results" according to 8.4.2;
  - If the variable TRIGGERED\_2F\_EVENT is set to TRUE and if equation 2 is fulfilled for the used frequency:
    - Set the variable TRIGGERED\_2F\_EVENT to FALSE;

Triggering condition:

Equation 1:

$$Q_{Used} \geq T_{Used\ 2f} + H_{2f} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used\ 2f}$  is the absolute threshold that applies for the used frequency and event 2f.

$H_{2f}$  is the hysteresis parameter for the event 2f.

Leaving triggered state condition:

Equation 2:

$$Q_{Used} < T_{Used2f} - H_{2f} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used2f}$  is the absolute threshold that applies for the used frequency and event 2f.

$H_{2f}$  is the hysteresis parameter for the event 2f.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of the currently used frequency is above the value of the IE "Threshold used frequency" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the used frequency.

## 14.11 UE autonomous update of virtual active set on non-used frequency (FDD only)

In the text that follows:

- A "non-used frequency" is a frequency that the UE has been ordered to measure upon but is not used for the connection. A "used frequency" is a frequency that the UE has been ordered to measure upon and is also currently used for the connection.
- "A non-used frequency (resp. cell) considered in an inter-frequency measurement" shall be understood as a non-used frequency (resp. cell) included in the list of cells pointed at in the IE "cells for measurement" if it was received for that measurement, or otherwise as a non-used frequency (resp. cell) included in the "Inter-frequency cell info" part of the variable CELL\_INFO\_LIST.

Within the measurement reporting criteria field in the MEASUREMENT CONTROL message the UTRAN notifies the UE which events should trigger a measurement report. For event-triggered inter frequency measurements it is possible to specify intra-frequency measurements reporting events for support of maintenance of an active set associated with a non-used frequency considered in that measurement, a "virtual active set" and used in the evaluation of the frequency quality estimates. The "initial virtual active set" for a frequency is the virtual active set that is associated to that frequency just after a message was received that sets up or modifies the inter-frequency measurement

A "non-used frequency" is a frequency that the UE has been ordered to measure upon but are not used by the active set. A "used frequency" is a frequency that the UE has been ordered to measure upon and is also currently used for the connection.

The autonomous update is controlled by the IE "UE-autonomous update mode" that can be set to the following values:

- On: Do the autonomous updates of the "virtual active set" according to the described rules below and also report the events that trigger the update of the "virtual active set".
- On with no reporting: Do the autonomous updates of the "virtual active set" according to the described rules below.
- Off: Only report the events and do no updates of the "virtual active set" unless ordered to do so by the IE "Inter-frequency set update".

If the IE "UE autonomous update mode" is set to "on" or "on with no reporting" the UE shall evaluate the following intra-frequency events and update the "virtual active set" associated with the frequency measured upon, according to the following rules:

The way the virtual active sets are initiated and updated for the non-used frequencies considered in an inter-frequency measurement is described in the two sections below, and depends on whether the IE "intra-frequency reporting criteria" is stored for the inter-frequency measurement or not. In case that IE is not stored, the IE "intra-frequency measurement" stored in other measurements of type intra-frequency shall be used.

### 14.11.1 Initial virtual active set

The way the UE shall act when a MEASUREMENT CONTROL message is received that sets up or modifies an inter-frequency measurement, and that includes the IE "Inter-frequency set update" and/or the IE "Intra-Frequency measurement reporting quantity" is described below.

- If the IE "Intra-Frequency measurement reporting criteria" is included in the MEASUREMENT CONTROL message, or if it was previously stored and if the IE "Inter-frequency set update" was included in the MEASUREMENT CONTROL message:

- If the IE "UE autonomous update mode" received or previously stored is set to "on" or "on with no reporting":

- For each non-used frequency  $F_i$  considered in the measurement, the initial virtual active set shall include the  $N_i$  cells that have either the greatest downlink  $E_c/N_0$ , the greatest downlink RSCP after despreading, or the lowest pathloss (depending on what is indicated in the IE "inter-frequency measurement quantity"), among the cells on frequency  $F_i$  considered in that inter-frequency measurement, where:

- if event 1a is configured in the "Intra-Frequency measurement reporting criteria":

$$N_i = \min(N_{1a}, N_{Cells\ F_i}) \text{ if } N_{1a} \neq 0 \text{ and } N_i = N_{Cells\ F_i} \text{ otherwise.}$$

where:

$N_{1a}$  is the "Reporting deactivation threshold" included in the "Intra-Frequency measurement" IE received for that inter-frequency measurement for event 1a.

$N_{Cells\ F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.

- else if event 1c is configured in the "Intra-Frequency measurement reporting criteria":

$$N_i = \min(N_{1c}, N_{Cells\ F_i}) \text{ if } N_{1c} \neq 0 \text{ and } N_i = N_{Cells\ F_i} \text{ otherwise.}$$

where:

$N_{1c}$  is the "Replacement activation threshold" included in the "Intra-Frequency measurement" IE received for that inter-frequency measurement for event 1c.

$N_{Cells F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.

- else:

$$N_i = N_{Cells F_i}$$

where:

$N_{Cells F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.

- If the IE “UE autonomous update mode” **received or previously stored** is set to “on”:
  - If event 1a is configured in the “Intra-Frequency measurement reporting criteria”:
    - Send a MEASUREMENT REPORT with IEs set as follows:
      - The Measurement identity to the identity of the inter-frequency measurement.
      - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1a, and in “Cell measurement event results” the CPICH info of all the cells included in a virtual active set of the non-used frequency considered in the inter-frequency measurement.
      - The IE “measured results” shall not be included.
  - Else if event 1c is configured in the “Intra-Frequency measurement reporting criteria”:
    - Send a measurement report with IEs set as follows:
      - The Measurement identity to the identity of the inter-frequency measurement.
      - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1c, and in “Cell measurement event results” the CPICH info of all the cells included in the virtual active set of the frequency considered in the inter-frequency measurement.
      - The IE “measured results” shall not be included.
- If the IE “Inter-frequency set update” is included in the message and if the IE “UE autonomous update mode” is set to “Off”:
  - If the IE “Measurement command” is set to “Modify”, if the value previously stored for the IE “UE autonomous update set” was also “Off” and if the IE “Intra-frequency measurement reporting criteria” was not included in the message:
    - Apply the modifications indicated in the “Inter-frequency set update” to the virtual active set that was valid before the message was received for the non-used frequency considered in that inter-frequency measurement.
  - Otherwise:

- Remove the possibly existing virtual active set of the non-used frequency considered in that measurement and set the initial virtual active set for it according to the “Inter-frequency set update” included in the message.
- If the IE “Inter-frequency set update” is not included in the message and if the IE “UE autonomous update mode” stored for the inter-frequency measurement is set to “Off”:
  - Remove the possibly existing virtual active set of the non-used frequency considered in that measurement, and consider the virtual active set for it as empty.
- If the IE “Intra-Frequency measurement reporting criteria” was not included in the MEASUREMENT CONTROL message, the UE shall
  - If the IE “UE autonomous update mode” is set to “on” or “on with no reporting”:
    - For each non-used frequency  $F_i$  considered in the measurement, the initial virtual active set shall include the  $N_i$  cells that have either the greatest downlink  $E_c/N_0$  or the greatest downlink RSCP after despreading or the lowest pathloss (depending on what is indicated in the IE “inter-frequency measurement quantity”), among the cells on frequency  $F_i$  considered in that inter-frequency measurement, where:
      - if event 1a is configured for the used frequency in an intra-frequency measurement:
        - if the “Reporting deactivation threshold” included in the

$$N_i = \min(N_{Ia}, N_{Cells\ F_i}) \text{ if } N_{Ia} \neq 0 \text{ and } N_i = N_{Cells\ F_i} \text{ otherwise.}$$
with:

$N_{Ia}$  is the “Reporting deactivation threshold” included in the intra-frequency measurement for the first event 1a defined in the intra-frequency measurement with the lowest identity.

$N_{Cells\ F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.
        - else if event 1c is configured for the used frequency in an intra-frequency measurement:

$$N_i = \min(N_{Ic}, N_{Cells\ F_i}) \text{ if } N_{Ic} \neq 0 \text{ and } N_i = N_{Cells\ F_i} \text{ otherwise.}$$
where:

$N_{Ic}$  is the “Replacement activation threshold” included in the “Intra-Frequency measurement” for the first event 1c defined in the intra-frequency measurement with the lowest identity.

$N_{Cells\ F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.
        - else:



$$N_i = N_{\text{Cells } F_i}$$

where:

$N_{\text{Cells } F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.

- If the IE “UE autonomous update mode” is set to “on”:
  - If event 1a is configured for the used frequency in an intra-frequency measurement:
    - Send a measurement report with IEs set as follows:
      - The Measurement identity to the identity of the inter-frequency measurement.
      - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1a, and in “Cell measurement event results” the CPICH info of all the cells included in the initial virtual active set of the non-used frequency considered in that measurement.
      - The IE “measured results” shall not be included.
    - Else if event 1c is configured for the used frequency in an intra-frequency measurement:
      - Send a measurement report with IEs set as follows:
        - The Measurement identity to the identity of the inter-frequency measurement.
        - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1c, and in “Cell measurement event results” the CPICH info of all the cells included in the virtual active set of the non-used frequency considered in that measurement.
        - The IE “measured results” shall not be included.
  - If the IE “UE autonomous update mode” is set to “off”:
    - Set the initial virtual active set of the non-used frequency considered in that inter-frequency measurement according to what is included in the “Inter-frequency set update” included in the message. If that IE was not received, the initial virtual active set for the frequencies considered in that measurement shall be empty.

### 14.11.2 Virtual active set update during an inter-frequency measurement

- if the IE “Intra-frequency measurement reporting criteria” is stored for an inter-frequency measurement, the UE shall:
  - if Event 1a is configured in that IE, shall make the UE shall, when this event is triggered (according to the criteria described in subclause 14.2.1.1) by a cell allowed to affect the

reporting range (i.e. not included in the IE “Cells forbidden to affect reporting range” if that IE is included) for a non-used frequency considered in that measurement:

- if the “Reporting deactivation threshold” is equal to 0, or if the “Reporting deactivation threshold” is different from 0 and the number of cells included in the virtual active set for that frequency is less than the “Reporting deactivation threshold”:
  - if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” add the primary CPICH that enters the reporting range to the "virtual active set" \_;
  - if the IE "UE autonomous update mode" is set to “on” or “off”, send a measurement report with IEs set as below:
    - The Measurement identity to the identity of the inter-frequency measurement.
    - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1a, and in “Cell measurement event results” the CPICH info of the cell that triggered the event.
    - The IE “measured results” shall not be included.
- if Event 1b was configured, shall make the UE shall when this event is triggered (according to the criteria described in subclause 14.2.1.2) by a cell allowed to affect the reporting range (i.e. not included in the IE “Cells forbidden to affect reporting range” if that IE is included) for a non-used frequency considered in that measurement:
  - if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” and if the number of cells included in the virtual active set is greater than 1, remove the a primary CPICH that leaves the reporting range from the "virtual active set" \_;
  - if the IE "UE autonomous update mode" is set to “on” or “off”, send a measurement report with IEs set as below:
    - The Measurement identity to the identity of the inter-frequency measurement.
    - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1b, and in “Cell measurement event results” the CPICH info of the cell that triggered the event.
    - The IE “measured results” shall not be included.
- if Event 1c was configured, shall make the UE shall when this event is triggered by a cell for a frequency considered in that measurement (according to the criteria described in subclause 14.2.1.3):
  - if the “Reporting activation threshold” is equal to 0, or if the “Reporting activation threshold” is different from 0 and the number of cells included in the virtual active set for that frequency is greater than or equal to the “Reporting activation threshold”:
    - if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” replace an active primary CPICH in the "virtual active set" with a non-active primary CPICH that hasve become better than the active primary CPICH \_;
    - if the IE "UE autonomous update mode" is set to “on” or “off”, send a measurement report with IEs set as below:
      - The Measurement identity to the identity of the inter-frequency measurement.
      - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1c, and in “Cell measurement event

results” the first entry as the CPICH info of the cell that triggered the event, and the rest of the entries as the cells that were in the virtual active set before the event occurred and that are worse than the cell that triggered the event, in the order of their measured value (best one first).

- The IE “measured results” shall not be included.

- If the IE “Intra-frequency measurement reporting criteria” is not stored for that inter-frequency measurement, the UE shall:

- apply the events of type 1a, 1b and 1c that were defined for the used frequency in other stored measurements of type “intra-frequency” at the time the inter-frequency measurement was set up and update the virtual active set for the non-used frequencies considered in that measurement according to the following rules:

- if several events of type 1a (resp. 1b,1c) were defined for the used frequency when the inter-frequency measurement was set up, only the first 1a event (resp 1b, 1c) that was defined in the measurement with the lowest measurement identity shall apply to the non-used frequencies.

- all the cells considered in the inter-frequency measurements shall be able to affect the reporting range for event 1a and 1b. (i.e. the IE “Cells forbidden to affect reporting range” possibly stored for the intra-frequency measurements on the used frequency does not apply to the non-used frequencies considered in the inter-frequency measurement).

- The IEs “amount of reporting” and “reporting interval” that were stored for the intra-frequency measurements on the used frequency shall not be considered if reports of the virtual active set updates are needed.

- if event 1a is applicable to the non-used frequencies considered in the inter-frequency measurement, the UE shall, when this event is triggered (according to the criteria described in subclause 14.2.1.1) by a cell for a non-used frequency considered in that measurement:

- if the “Reporting deactivation threshold” is equal to 0, or if the “Reporting deactivation threshold” is different from 0 and the number of cells included in the virtual active set for that frequency is less than the “Reporting deactivation threshold”

- if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” add the primary CPICH that enters the reporting range to the "virtual active set"

- if the IE "UE autonomous update mode" is set to “on” or “off”, send a measurement report with IEs set as below:

- The Measurement identity to the identity of the inter-frequency measurement.

- The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1a, and in “Cell measurement event results” the CPICH info of the cell that triggered the event.

- The IE “measured results” shall not be included.

- if event 1b is applicable for the non-used frequencies considered in that inter-frequency measurement, the UE shall when this event is triggered (according to the criteria described in subclause 14.2.1.2) by a cell for a non-used frequency considered in that measurement:

- if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” and if the number of cells included in the virtual active set is greater than 1, remove the primary CPICH that leaves the reporting range from the "virtual active set"

- if the IE "UE autonomous update mode" is set to "on" or "off", send a measurement report with IEs set as below:
  - The Measurement identity to the identity of the inter-frequency measurement.
  - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1b, and in "Cell measurement event results" the CPICH info of the cell that triggered the event.
  - The IE "measured results" shall not be included.
- if event 1c is applicable for the non-used frequencies considered in that inter-frequency measurement, the UE shall when this event is triggered (according to the criteria described in subclause 14.2.1.3) by a cell for a non-used frequency considered in that measurement:
  - if the "Reporting activation threshold" is equal to 0, or if the "Reporting activation threshold" is different from 0 and the number of cells included in the virtual active set for that frequency is greater than or equal to the "Reporting activation threshold"
    - if the IE "UE autonomous update mode" is set to "on" or "on with no reporting" replace an active primary CPICH in the "virtual active set" with a non-active primary CPICH that has become better than the active primary CPICH
  - if the IE "UE autonomous update mode" is set to "on" or "off", send a measurement report with IEs set as below:
    - The Measurement identity to the identity of the inter-frequency measurement.
    - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1c, and in "Cell measurement event results" the first entry as the CPICH info of the cell that triggered the event, and the rest of the entries as the cells that were in the virtual active set before the event occurred and that are worse than the cell that triggered the event, in the order of their measured value (best one first).
    - The IE "measured results" shall not be included.

## CHANGE REQUEST

⌘ **25.331 CR 922** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Inter-frequency measurement corrections		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 2001-09-03
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
<i>Use <u>one</u> of the following categories:</i>		<i>Use <u>one</u> of the following releases:</i>	
<b>F</b> (correction)		2 (GSM Phase 2)	
<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)	
<b>B</b> (addition of feature),		R97 (Release 1997)	
<b>C</b> (functional modification of feature)		R98 (Release 1998)	
<b>D</b> (editorial modification)		R99 (Release 1999)	
Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		REL-4 (Release 4)	
		REL-5 (Release 5)	

<b>Reason for change:</b>	⌘ The description of the 2x events is not complete and the way the virtual active sets are initiated and updated as well as the way the virtual active set updates are reported is not specified at all. A strict description of the events and of the way the UE shall behave regarding the virtual active sets is needed in order to avoid ambiguities, and for inter-frequency measurements to be usable.
<b>Summary of change:</b>	⌘ <ol style="list-style-type: none"><li>1. In section 8.6.7.9, if the choice “Report all virtual active set cells + cells within monitored set on non-used frequency” is used, it is proposed that the “Maximum number of reported cells” applies per frequency. For instance, two frequencies f1 and f2 have triggered the same event at the same time, and if the “Maximum number of reported cells” is set to 1, the report shall contain all virtual active set cells on f1, 1 monitored cells on f1 (at most), all virtual active set cells on f2 and 1 monitored cells on f2 (at most).</li><li>2. In section 8.6.7.14, if the “inter-frequency set update” is not received at measurement set-up, the UE shall set the variable CONFIGURATION_INCOMPLETE to TRUE. In case the “UE autonomous update mode” is set to “On” or “Off”, only one non-used frequency can be concerned by the inter-frequency measurement, since the frequency is not included in the Inter-frequency set update (10.3.7.22) for adding or removing radio links.</li><li>3. Inter-frequency measurement reporting criteria (10.3.7.19): the threshold is not necessary in case event 2a is used, while W is needed. Two clauses were added to make that clear.</li><li>4. Inter-frequency reporting quantity (10.3.7.21): it is added that for R99, the only valid value of the IE “Frequency quality estimate” in “Inter-frequency reporting quantity” is FALSE, since this cannot be reported anywhere.</li></ol>

5. Intra-frequency measurement reporting criteria (10.3.7.39): it is clarified that in the case of intra-frequency events triggered for the update of virtual active sets in an event based inter-frequency measurement, only one rapport shall be sent, and no periodical reporting shall be used. The two IEs “Amount of reporting” and “Reporting interval” are thus not needed in the case this IE is included in the IE “Inter-frequency measurement”.
6. Reporting cell status (10.3.7.61): the use of the active set/virtual active set terminology is not consistent and a correction is proposed. Also, it is clarified that in certain cases, the “Maximum number of reported cells” shall apply per reported non-used frequency.
7. Section 11.3: the naming in ASN.1 was aligned to what exist in the tabular.
8. Sections 13.4.xx: new variables are added that are used in the description of the 2x events.
9. Sections 14.2.0a, 14.2.0b, 14.2.0c: the measurement quantities, frequency quality estimate and reporting quantities for inter-frequency measurements are clarified. In 14.2.0b, the “carrier j” index used has been changed to “frequency j” to make it consistent with the text that follows.
10. Sections 14.2.1.1 to 14.2.1.6: event descriptions of the same order as the ones existing for the intra-frequency events are added.
11. Section 14.11: a description of the way the virtual active sets shall be initiated and updated, and of the way the updates shall be reported to UTRAN is added. Due to the fact that in the IE “inter-frequency measurement” (10.3.7.16), only one of the two IEs: “inter-frequency measurement reporting criteria” and “intra-frequency measurement reporting criteria” can be included, it is proposed that the intra-frequency measurement reporting criteria defined in other measurements of type “intra-frequency” can be used. If no intra-frequency measurements are defined for the used frequency neither, then all the cells considered in the measurement on each non-used frequency shall be included in the active set. That avoids two MEASUREMENT CONTROL messages being needed to set up an event-based inter-frequency measurement.

This CR has isolated impact on inter-frequency measurement reporting.

**Consequences if not approved:** ☞ No clear description of the way inter-frequency measurements work, which would mean that a consistent UE behaviour cannot be guaranted.

**Clauses affected:** ☞ 8.6.7.14, 10.3.7.19, 10.3.7.21, 10.3.7.22, 10.3.7.38, 10.3.7.39, 10.3.7.61, 11.3, 13.4.27f4 (new), 13.4.27f5 (new), 13.4.27f6 (new), 13.4.27f7 (new), 13.4.27f8 (new), 13.4.27f9 (new), 14.2, 14.2.0a (new), 14.2.0b (new), 14.2.0c (new), 14.2.1, 14.2.1.1, 14.2.1.2, 14.2.1.3, 14.2.1.4, 14.2.1.5, 14.2.1.6, 14.11, 14.11.1 (new), 14.11.2 (new)

**Other specs affected:** ☞  Other core specifications ☞ 25.331 v3.7.0, CR 0921r1  
 Test specifications  
 O&M Specifications

**Other comments:** ☞

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](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.

#### 8.6.7.14 Inter-frequency measurement

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

- clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT\_IDENTITY;
- set the variable CONFIGURATION\_INCOMPLETE to TRUE.
- In the case of an inter-frequency measurement for FDD:
  - If IE "Inter-frequency measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", if an inter-frequency event is configured that is different from event 2d or 2f, and if the IE "Inter-frequency SET UPDATE" is not received in that same message:
    - set the variable CONFIGURATION\_INCOMPLETE to TRUE.
  - If the IE "Inter-frequency SET UPDATE" is received:
    - if the value of the IE "Autonomous Set Update" set to "Off" or "On":
      - if more than one frequency is included in the list of cells pointed at in the IE "cells for measurement" if also included in the same IE "Inter-frequency measurement", or otherwise included in the "Inter-frequency cell info" part of the variable CELL\_INFO\_LIST:
        - the UE shall set the variable INVALID\_CONFIGURATION to TRUE.

If the variable CONFIGURATION\_INCOMPLETE is set to TRUE the UE shall act as described in subclause 8.4.1.4a.

#### 10.3.7.19 Inter-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an inter-frequency measurements. All events concerning inter-frequency measurements are labelled 2x where x is a,b,c..

Event 2a: Change of best frequency.

Event 2b: The estimated quality of the currently used frequency is below a certain threshold **and** the estimated quality of a non-used frequency is above a certain threshold.

Event 2c: The estimated quality of a non-used frequency is above a certain threshold.

Event 2d: The estimated quality of the currently used frequency is below a certain threshold.

Event 2e: The estimated quality of a non-used frequency is below a certain threshold.

Event 2f: The estimated quality of the currently used frequency is above a certain threshold.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters required for each event	OP	1 to <maxMeas Event>		
>Inter-frequency event identity	MP		Inter-frequency event identity 10.3.7.14	
>Threshold used frequency	CV – clause 0		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm
>W used frequency	CV – clause 0 <sub>2</sub>		Real(0, 0.1..2.0 by step of 0.1)	
>Hysteresis	MP		Real(0, 0.5..14.5 by step of 0.5)	In event 2a, 2b, 2c, 2d, 2e, 2f
>Time to trigger	MP		Time to trigger 10.3.7.64	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms.
>Reporting cell status	OP		Reporting cell status 10.3.7.61	
>Parameters required for each non-used frequency	OP	1 to <maxFreq >		
>>Threshold non used frequency	CV – clause 1		Integer(-115..0)	Ranges used depend on measurement quantity. CPICH Ec/No -24..0dB CPICH/Primary CCPCH RSCP -115..-25dBm <a href="#">This IE is not needed if “inter-frequency event identity” is set to 2a. However, it is specified to be mandatory to align with the ASN.1.</a>
>>W non-used frequency	CV-clause 1		Real(0, 0.1..2.0 by step of 0.1)	

Condition	Explanation
Clause 0	<u>The IE is mandatory if "inter-frequency event identity" is set to 2a, 2b, 2d, or 2f, otherwise the IE is not needed.</u>
Clause 1	The IE is mandatory <del>in</del> -if "inter-frequency event identity" is set to 2a, 2b, 2c or 2e, otherwise the IE is not needed.
<u>Clause 2</u>	<u>The IE is mandatory if "inter-frequency event identity" is set to 2a, 2b, 2d or 2f, otherwise the IE is not needed.</u>

### 10.3.7.21 Inter-frequency reporting quantity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UTRA Carrier RSSI	MP		Boolean	TRUE means report is requested
Frequency quality estimate	MP		Boolean	TRUE means that report is requested. <u>This parameter is not used in this release and should be set to FALSE. It shall be ignored by the UE.</u>
Non frequency related cell reporting quantities	MP		Cell reporting quantities 10.3.7.5	

### 10.3.7.22 Inter-frequency SET UPDATE

NOTE: Only for FDD.

Contains the changes of the virtual active set associated with a non-used frequency. This information makes it possible to use events defined for Intra-frequency measurement within the same non-used frequency for Inter-frequency measurement reporting criteria. This information also controls if the UE should use autonomous updating of the virtual active set associated with a non-used frequency.

Information Element/group name	Need	Multi	Type and reference	Semantics description
UE autonomous update mode	MP		Enumerated (On, On with no reporting, Off)	
Non autonomous update mode	<i>CV-Update</i>			
>Radio link addition information	OP	1 to <maxRL>		Radio link addition information required for each RL to add
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Note 1
>Radio link removal information	OP	1 to <MaxRL>		Radio link removal information required for each RL to remove
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60	Note 1

Condition	Explanation
Update	The IE is mandatory if IE "UE autonomous update mode" is set to "Off", otherwise the IE is not needed.

NOTE 1: If it is assumed that CPICH downlink scrambling code is always allocated with sufficient reuse distances, CPICH downlink scrambling code will be enough for designating the different radio links.

### 10.3.7.38 Intra-frequency measurement quantity

The quantity the UE shall measure in case of intra-frequency measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Filter coefficient	MP		Filter coefficient 10.3.7.9	
CHOICE mode	MP			
>FDD				
>>Measurement quantity	MP		Enumerated(C PICH Ec/N0, CPICH RSCP, Pathloss, UTRA Carrier RSSI)	If used in Inter system measurement quantity only Ec/N0 and RSCP <del>is</del> <u>are</u> allowed. If used in inter-frequency measurement quantity RSSI is not allowed.
>TDD				
>>Measurement quantity list	MP	1 to 4		
>>>Measurement quantity	MP		Enumerated(Primary CCPCH RSCP, Pathloss, Timeslot ISCP, UTRA Carrier RSSI)	If used in inter-frequency measurement quantity RSSI is not allowed.

### 10.3.7.39 Intra-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an intra-frequency measurement. All events concerning intra-frequency measurements are labelled 1x where x is a, b, c,....

Event 1a: A Primary CPICH enters the Reporting Range (FDD only).

Event 1b: A Primary CPICH leaves the Reporting Range (FDD only).

Event 1c: A Non-active Primary CPICH becomes better than an active Primary CPICH (FDD only).

Event 1d: Change of best cell [Note 1] (FDD only).

Event 1e: A Primary CPICH becomes better than an absolute threshold (FDD only).

Event 1f: A Primary CPICH becomes worse than an absolute threshold (FDD only).

Event 1g: Change of best cell in TDD.

Event 1h: Timeslot ISCP below a certain threshold (TDD only).

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

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

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

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

### 10.3.7.61 Reporting Cell Status

Indicates maximum allowed number of cells to report and whether active set cells and/or virtual active set cells and/or monitored set cells on and/or detected set cells used frequency and/or monitored set cells on non used frequency should/should not be included in the IE "Measured results".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>reported cell</i>	MP			
>Report cells within active set				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set cells on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within active set and/or monitored set cells on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set and/or detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report all active set cells + cells within monitored set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within monitored set and/or detected set on used frequency				
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	

>Report cells within virtual active set				
>>Maximum number of reported cells <u>per reported non-used frequency</u>	MP		Integer(1..6)	
>Report cells within monitored set on non-used frequency				
>>Maximum number of reported cells <u>per reported non-used frequency</u>	MP		Integer(1..6)	
>Report cells within monitored and/or <u>virtual</u> active set on non-used frequency				
>>Maximum number of reported cells <u>per reported non-used frequency</u>	MP		Integer(1..6)	
>Report all virtual active set cells + cells within monitored set on non-used frequency				
>>Maximum number of reported cells <u>per reported non-used frequency</u>	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report cells within active set or within virtual active set				
>>Maximum number of reported cells	MP		Integer (1..12)	
>Report cells within active and/or monitored set on used frequency or within <u>virtual</u> active and/or monitored set on non-used frequency				
>>Maximum number of reported cells	MP		Integer(1..12)	

---

## 11 Message and Information element abstract syntax (with ASN.1)

< \*\*\* Unecessary Definitions Removed \*\*\* >

### 11.3 Information element definitions

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

Event2a ::=
    SEQUENCE {
        usedFreqThresholddummy      Threshold,
        -- IE "dummy" shall not be sent and shall be ignored if received.
```

```

-- IE "dummy" should be removed in later versions of the message including this IE

usedFreqW                W,
hysteresis                HysteresisInterFreq,
timeToTrigger            TimeToTrigger,
reportingCellStatus      ReportingCellStatus          OPTIONAL,
nonUsedFreqParameterList NonUsedFreqParameterList    OPTIONAL
}

MaxNumberOfReportingCellsType1 ::= ENUMERATED {
    e1, e2, e3, e4, e5, e6}

MaxNumberOfReportingCellsType2 ::= ENUMERATED {
    e1, e2, e3, e4, e5, e6, e7, e8, e9, e10, e11,
    e12}

MaxNumberOfReportingCellsType3 ::= ENUMERATED {
    viactCellsPlus1,
    viactCellsPlus2,
    viactCellsPlus3,
    viactCellsPlus4,
    viactCellsPlus5,
    viactCellsPlus6 }

NonUsedFreqParameter ::= SEQUENCE {
    nonUsedFreqThreshold Threshold,
    -- IE "nonUsedFreqThreshold" is not needed in case of event 2a
    -- In case of event 2a UTRAN should include value 0 within IE "nonUsedFreqThreshold"
    -- In case of event 2a, the UE shall be ignore IE "nonUsedFreqThreshold"
    -- In later versions of the message including this IE, a special version of
    -- IE "NonUsedFreqParameterList" may be defined for event 2a, namely a
    -- version not including IE "nonUsedFreqThreshold"
    nonUsedFreqW                W
}

ReportingCellStatus ::= CHOICE{
    withinActiveSet                MaxNumberOfReportingCellsType1,
    withinMonitoredSetUsedFreq     MaxNumberOfReportingCellsType1,
    withinActiveAndOrMonitoredUsedFreq MaxNumberOfReportingCellsType1,
    withinDetectedSetUsedFreq     MaxNumberOfReportingCellsType1,
    withinMonitoredAndOrDetectedUsedFreq
                                MaxNumberOfReportingCellsType1,
    allActiveplusMonitoredSet     MaxNumberOfReportingCellsType3,
    allActivePlusDetectedSet     MaxNumberOfReportingCellsType3,
    allActivePlusMonitoredAndOrDetectedSet
                                MaxNumberOfReportingCellsType3,
    withinVirtualActSet           MaxNumberOfReportingCellsType1,
    withinMonitoredSetNonUsedFreq MaxNumberOfReportingCellsType1,
    withinMonitoredAndOrVirtualActSetNonUsedFreq
                                MaxNumberOfReportingCellsType1,
    allVirtualActSetplusMonitoredSetNonUsedFreq
                                MaxNumberOfReportingCellsType3,
    withinActSetOrVirtualActSet   MaxNumberOfReportingCellsType2,
    withinActSetAndOrMonitoredUsedFreqOrVirtualActSetAndOrMonitoredNonUsedFreq
                                MaxNumberOfReportingCellsType2
}

```

### 13.4. 27f4 BEST FREQUENCY 2A EVENT

This variable contains information about a 2a event that has been configured in the UE. There is one such variable per 2a event configured in the UE.



<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Best frequency</u>	<u>MP</u>		<u>Frequency info</u> <u>10.3.6.36</u>	

### 13.4. 27f5 TRIGGERED 2B EVENT

This variable contains information about a 2b event that has been configured in the UE. There is one such variable per 2b event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Frequency triggered</u>	<u>OP</u>	<u>1 to &lt; maxCellMe as&gt;</u>		
<u>&gt;Frequency</u>	<u>MP</u>	<u>Frequency info</u> <u>10.3.6.36</u>		

### 13.4. 27f6 TRIGGERED 2C EVENT

This variable contains information about a 2c event that has been configured in the UE. There is one such variable per 2c event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Frequency triggered</u>	<u>OP</u>	<u>1 to &lt; maxCellMe as&gt;</u>		
<u>&gt;Frequency</u>	<u>MP</u>	<u>Frequency info</u> <u>10.3.6.36</u>		

### 13.4. 27f7 TRIGGERED 2D EVENT

This variable contains information about a 2d event that has been configured in the UE. There is one such variable per 2d event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Event triggered</u>	<u>OP</u>		<u>Boolean</u>	

### 13.4. 27f8 TRIGGERED 2E EVENT

This variable contains information about a 2e event that has been configured in the UE. There is one such variable per 2e event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Frequency triggered</u>	<u>OP</u>	<u>1 to &lt;maxCellMeas&gt;</u>		
<u>&gt;Frequency</u>	<u>MP</u>	<u>Frequency info</u> <u>10.3.6.36</u>		

### 13.4.27f9 TRIGGERED 2F EVENT

This variable contains information about a 2f event that have been configured in the UE. There is one such variable per 2f event configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>Event triggered</u>	<u>OP</u>		<u>Boolean</u>	

## 14.2 Inter-frequency measurements

### 14.2.0a Inter-frequency measurement quantities

The two first measurement quantities listed below are used by the UE to evaluate whether an inter-frequency measurement event has occurred or not, through the computation of a frequency quality estimate. Which quantity to use to compute the frequency quality estimate for an inter-frequency measurement is given in the "Inter-frequency measurement quantity" stored for that measurement. In the FDD case, all three measurement quantities can be used for the update of the virtual active set of the non-used frequencies as described in section 14.11.

1. Downlink Ec/No
2. Downlink received signal code power (RSCP) after despreading.
3. Downlink path loss.

For FDD:

Pathloss in dB = Primary CPICH Tx power - CPICH RSCP.

For Primary CPICH Tx power the IE "Primary CPICH Tx power" shall be used. The unit is dBm.

CPICH RSCP is the result of the CPICH RSCP measurement. The unit is dBm.

A description of those values can be found in [7] and [8].

### 14.2.0b Frequency quality estimate

For FDD cell:

The frequency quality estimate used in events 2a, 2b, 2c, 2d, ~~and~~ 2e and 2f is defined as:

$$Q_{\text{frequency } j} = 10 \cdot \text{Log}M_{\text{frequency } j} = W_j \cdot 10 \cdot \text{Log} \left( \sum_{i=1}^{N_{A_j}} M_{i,j} \right) + (1 - W_j) \cdot 10 \cdot \text{Log}M_{\text{Best } j},$$

The variables in the formula are defined as follows: (“the virtual active set on frequency j” should be understood as the active set if frequency j is the used frequency. If frequency j is a non-used frequency, the way the virtual active set is initiated and updated is described in section 14.11)

$Q_{\text{frequency } j}$  is the estimated quality of the virtual active set on frequency j.

$M_{\text{frequency } j}$  is the estimated quality of the virtual active set on frequency j.

$M_{i,j}$  is a measurement result of cell i in the virtual active set on frequency j.

$N_{A_j}$  is the number of cells in the virtual active set on frequency j.

$M_{\text{Best } j}$  is the measurement result of the cell in the virtual active set on frequency j with the highest measurement result.

$W_j$  is a parameter sent from UTRAN to UE and used for frequency j.

H is the hysteresis parameter.

If the measurement result is CPICH-Ec/No then  $M_{\text{FrequencyNew}}$ ,  $M_{i,j}$  and  $M_{\text{Best}}$  are expressed as ratios.

If the measurement result is CPICH-RSCP or PCCPCH-RSCP then  $M_{\text{FrequencyNew}}$ ,  $M_{i,j}$  and  $M_{\text{Best}}$  are expressed in [mW].

For TDD cells:

$$Q_{i, \text{frequency } j} = 10 \cdot \text{Log}M_{i, \text{frequency } j} + O_{i,j}$$

$Q_{i, \text{frequency } j}$  is the estimated quality of cell i on frequency j.

$M_{\text{frequency } j}$  is the measurement result for Primary CCPCH RSCP of cell i on frequency j expressed in [mW].

$O_{i,j}$  is the cell individual offset of the currently evaluated cell i on frequency j.  $O_{i,j}$  is set by IE “Cell individual offset”

### 14.2.0c Inter-frequency reporting quantities

The quantities that the UE shall report for each cell to UTRAN when the event is triggered for an inter-frequency measurement is given by the “Inter-frequency reporting quantity” IE stored for this measurement and can be the following, from 1 to 8. The quantity number 9 can be reported for each frequency that triggered the report.

1. Cell identity
2. SFN-SFN observed time difference
3. Cell synchronisation information
4. Downlink Ec/No (FDD)
5. Downlink path loss.

For FDD:

Pathloss in dB = Primary CPICH Tx power - CPICH RSCP.

For Primary CPICH Tx power the IE "Primary CPICH Tx power" shall be used. The unit is dBm.

CPICH RSCP is the result of the CPICH RSCP measurement. The unit is dBm.

For TDD:

Pathloss in dB = Primary CCPCH TX power - Primary CCPCH RSCP.

For Primary CCPCH TX power the IE "Primary CCPCH TX Power" shall be used. The unit is dBm.

Primary CCPCH RSCP is the result of the Primary CCPCH RSCP measurement. The unit is dBm.

If necessary Pathloss shall be rounded up to the next higher integer.

Results higher than 158 shall be reported as 158.

Results lower than 46 shall be reported as 46.

6. Downlink received signal code power (RSCP) after despreading (of a primary CPICH for FDD, and of a primary CCPCH for TDD).
7. ISCP measured on Timeslot basis. (TDD)
8. Proposed TGSN (TDD)
9. UTRA carrier RSSI

A description of those values can be found in [7] and [8].

## 14.2.1 Inter-frequency reporting events

Within the measurement reporting criteria field in the MEASUREMENT CONTROL message UTRAN notifies the UE which events should trigger the UE to send a MEASUREMENT REPORT message. ~~Examples of inter-frequency reporting events that would be useful for inter-frequency handover evaluation are given below. Note that normally the UEs do not need to report all these events.~~ The listed events are the toolbox from which the UTRAN can choose the reporting events that are needed for the implemented handover evaluation function, or other radio network functions.

All events are evaluated with respect to one of the measurement quantities given in subclause ~~14.2.0a~~14.1.1. The measurement quantities are measured on the monitored primary common pilot channels (CPICH) in FDD mode and the monitored primary common control channels (PCCPCH) in TDD mode of the cell defined in the measurement object. ~~The measurement objects are the monitored primary common pilot channels (CPICH) in FDD mode and the monitored primary common control channels (PCCPCH) in TDD mode.~~ A "non-used frequency" is a frequency that the UE has ~~ve~~ been ordered to measure upon but ~~isare~~ not used ~~for of~~ the ~~connection~~active set. A "used frequency" is a frequency that the UE has ~~ve~~ been ordered to measure upon and is also currently used for the connection.

### 14.2.1.1 Event 2a: Change of best frequency.

When event 2a is configured in the UE within a measurement, the UE shall:

- When the measurement is initiated or resumed, store the used frequency in the variable BEST FREQUENCY 2A EVENT
- If equation 1 below has been fulfilled during the time "Time to trigger" for a frequency included for that event and which is not stored in the variable BEST FREQUENCY 2A EVENT:

- Send a measurement report with IEs set as below:
  - In “inter-frequency measurement event results”:
    - “inter-frequency event identity” to “2a”, and
    - “Frequency info” to the frequency that triggered the event and “Non frequency related measurement event results”
    - to the “Primary CPICH info” of the best primary CPICH for FDD cells
    - or
    - “Primary CCPCH info” to the “Cells parameters ID” of the best primary CCPCH for TDD cells
    - on that frequency;
    - “measured results” and possible “additional measured results” according to 8.4.2;
  - Update the variable BEST\_FREQUENCY\_2A\_EVENT with that frequency

Equation 1:

$$Q_{Not\ Best} \geq Q_{Best} + H_{2a} / 2$$

The variables in the formula are defined as follows:

$Q_{Not\ Best}$  is the quality estimate of a frequency not stored the “best frequency” in the variable BEST\_FREQUENCY\_2A\_EVENT.

$Q_{Best}$  is the quality estimate of the frequency stored in “best frequency” in the variable BEST\_FREQUENCY\_2A\_EVENT.

$H_{2a}$  is the hysteresis parameter for the event 2a in that measurement.

If any of the non-used frequencies quality estimate becomes better than the currently used frequency quality estimate, and event 2a has been ordered by UTRAN then this event shall trigger a report to be sent from the UE when the hysteresis and time to trigger conditions is fulfilled. The corresponding report contains (at least) the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency that triggered the event.

14.2.1.2 Event 2b: The estimated quality of the currently used frequency is below a certain threshold **and** the estimated quality of a non-used frequency is above a certain threshold.

When an inter-frequency measurement configuring event 2b is set up, the UE shall create a variable TRIGGERED\_2B\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 2b is configured in the UE within a measurement, the UE shall:

- If equations 1 and 2 below have been fulfilled during the time “Time to Trigger” from the same instant, respectively for one or several non-used frequencies included for that event and for the used frequency:
- If any of those non-used frequency is not stored in the variable TRIGGERED\_2B\_EVENT:

- Store the non-used frequencies that triggered the event and that were not previously stored in the variable TRIGGERED\_2B\_EVENT into that variable;
- Send a measurement report with IEs set as below:
  - In “inter-frequency measurement event results”:
    - “inter-frequency event identity” to “2b”, and
    - for each non-used frequency that triggered the event, beginning with the best frequency “Frequency info” to that non-used frequency and “Non frequency related measurement event results”
      - to the “Primary CPICH info” of the best primary CPICH for FDD cells
      - or
      - “Primary CCPCH info” to the “Cell parameters ID” of the best primary CCPCH for TDD cells
      - on that non-used frequency;
  - “measured results” and possible “additional measured results” according to 8.4.2;
- If equation 3 below is fulfilled for a non-used frequency stored in the variable TRIGGERED\_2B\_EVENT
- Remove that non-used frequency from the variable TRIGGERED\_2B\_EVENT;
- If equation 4 below is fulfilled for the used frequency:
- Clear the variable TRIGGERED\_2B\_EVENT;

Triggering conditions:

Equation 1:

$$Q_{Nonused} \geq T_{Nonusedb} + H_{2b}/2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency that becomes better than an absolute threshold.

$T_{Non used 2b}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

Equation 2:

$$Q_{Used} \leq T_{Usedb} - H_{2b}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used 2b}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

Leaving triggered state condition:

Equation 3:

$$Q_{Nonused} < T_{Nonusedb} - H_{2b}/2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency that is stored in the variable TRIGGERED\_2B\_EVENT.

$T_{Non used 2b}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

Equation 4:

$$Q_{Used} > T_{Usedb} + H_{2b}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used 2b}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of the currently used frequency is below the value of the IE "Threshold used frequency" and the estimated quality of a non-used frequency is above the value of the IE "Threshold non-used frequency" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency that triggered the event.

#### 14.2.1.3 Event 2c: The estimated quality of a non-used frequency is above a certain threshold

When an inter-frequency measurement configuring event 2c is set up, the UE shall create a variable TRIGGERED\_2C\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 2c is configured in the UE within a measurement, the UE shall:

- If equation 1 below has been fulfilled for one or several non-used frequencies included for that event during the time "Time to trigger":
  - If any of those non-used frequencies is not stored in the variable TRIGGERED\_2C\_EVENT:
    - Store the non-used frequencies that triggered the event and that were not previously stored in the variable TRIGGERED\_2C\_EVENT into that variable;
    - Send a measurement report with IEs set as below:
      - In "inter-frequency measurement event results":
        - "inter-frequency event identity" to "2c", and
        - for each non-used frequency that triggered the event, beginning with the best frequency "Frequency info" to that non-used frequency and "Non frequency related measurement event results"

- to the “Primary CPICH info” of the best primary CPICH for FDD cells

or

- “Primary CCPCH info” to the “Cell parameters ID” of the best primary CCPCH for TDD cells

on that non-used frequency;

- If equation 2 below is fulfilled for a non-used frequency stored in the variable TRIGGERED\_2C\_EVENT:

- Remove that non-used frequency from the variable TRIGGERED\_2C\_EVENT;

Triggering condition:

Equation 1:

$$Q_{Nonused} \geq T_{Nonused2c} + H_{2c}/2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency that becomes better than an absolute threshold.

$T_{Non used 2c}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2c}$  is the hysteresis parameter for the event 2c.

Leaving triggered state condition:

Equation 2:

$$Q_{Nonused} < T_{Nonused2c} - H_{2c}/2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency stored in the variable TRIGGERED\_2C\_EVENT.

$T_{Non used 2c}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2c}$  is the hysteresis parameter for the event 2c.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of a non-used frequency is above the value of the IE "Threshold non-used frequency" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency.

#### 14.2.1.4 Event 2d: The estimated quality of the currently used frequency is below a certain threshold

When an inter-frequency measurement configuring event 2d is set up, the UE shall create a variable TRIGGERED\_2D\_EVENT related to that measurement, which shall initially be set to FALSE. This variable shall be deleted when the measurement is released.

When event 2d is configured in the UE within a measurement, the UE shall:

- If equation 1 below has been fulfilled for the used frequency during the time “Time to trigger”:



- If the variable TRIGGERED\_2D\_EVENT is set to FALSE:
  - Set the variable TRIGGERED\_2D\_EVENT to TRUE;
  - Send a measurement report with IEs set as below:
    - In “inter-frequency event results”: “inter-frequency event identity” to “2d” and no IE “Inter-frequency cells”;
    - “measured results” and possible “additional measured results” according to 8.4.2;
- If the variable TRIGGERED\_2D\_EVENT is set to TRUE and if equation 2 is fulfilled for the used frequency:
  - Set the variable TRIGGERED\_2D\_EVENT to FALSE;

Triggering condition:

Equation 1:

$$Q_{Used} \leq T_{Used2d} - H_{2d}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used2d}$  is the absolute threshold that applies for the used frequency and event 2d.

$H_{2d}$  is the hysteresis parameter for the event 2d.

Leaving triggered state condition:

Equation 2:

$$Q_{Used} > T_{Used2d} + H_{2d}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used2d}$  is the absolute threshold that applies for the used frequency and event 2d.

$H_{2d}$  is the hysteresis parameter for the event 2d.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of the currently used frequency is below the value of the IE “Threshold used frequency” and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the used frequency.

#### 14.2.1.5 Event 2e: The estimated quality of a non-used frequency is below a certain threshold

When an inter-frequency measurement configuring event 2e is set up, the UE shall create a variable TRIGGERED\_2E\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 2e is configured in the UE within a measurement, the UE shall:

- If equation 1 below has been fulfilled for one or several non-used frequencies included for that event during the time “Time to trigger”:
  - If any of those non-used frequencies is not stored in the variable TRIGGERED\_2E\_EVENT:
    - Store the non-used frequencies that triggered the event and that were not previously stored in the variable TRIGGERED\_2E\_EVENT into that variable;
    - Send a measurement report with IEs set as below:
      - In “inter-frequency measurement event results”:
        - “inter-frequency event identity” to “2e”, and
        - for each non-used frequency that triggered the event, beginning with the best frequency “Frequency info” to that non-used frequency and “Non frequency related measurement event results”
          - to the “Primary CPICH info” of the best primary CPICH for FDD cells
          - or
          - “Primary CCPCH info” to the “Cell parameters ID” of the best primary CCPCH for TDD cells
      - on that non-used frequency;
    - “measured results” and possible “additional measured results” according to 8.4.2;
- If equation 2 below is fulfilled for a non-used frequency stored in the variable TRIGGERED\_2E\_EVENT:
  - Remove that non-used frequency from the variable TRIGGERED\_2E\_EVENT;

Triggering condition:

Equation 1:

$$Q_{Nonused} \leq T_{Nonused2e} - H_{2e} / 2$$

The variables in the formula are defined as follows:

$Q_{Non used}$  is the quality estimate of a non-used frequency that becomes worse than an absolute threshold.

$T_{Non used 2e}$  is the absolute threshold that applies for that non-used frequency for that event.

$H_{2e}$  is the hysteresis parameter for the event 2e.

Leaving triggered state condition:

Equation 2:

$$Q_{Nonused} > T_{Nonused2e} + H_{2e} / 2$$

The variables in the formula are defined as follows:

$Q_{Non\ used}$  is the quality estimate of a non-used frequency stored in the variable TRIGGERED\_2E\_EVENT.

$T_{Non\ used\ 2e}$  is the absolute threshold that applies for that non-used frequency for that event.

$H_{2e}$  is the hysteresis parameter for the event 2e.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of a non-used frequency is below the value of the IE "Threshold non-used frequency" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the non-used frequency.

#### 14.2.1.6 Event 2f: The estimated quality of the currently used frequency is above a certain threshold

When an inter-frequency measurement configuring event 2f is set up, the UE shall create a variable TRIGGERED\_2F\_EVENT related to that measurement, which shall initially be set to FALSE. This variable shall be deleted when the measurement is released.

When event 2f is configured in the UE within a measurement, the UE shall:

- If equation 1 below has been fulfilled for the used frequency during the time "Time to trigger":
  - If the variable TRIGGERED\_2F\_EVENT is set to FALSE:
    - Set the variable TRIGGERED\_2F\_EVENT to TRUE;
    - Send a measurement report with IEs set as below:
      - In "inter-frequency event results": "inter-frequency event identity" to "2f", and no IE "Inter-frequency cells";
      - "measured results" and possible "additional measured results" according to 8.4.2;
  - If the variable TRIGGERED\_2F\_EVENT is set to TRUE and if equation 2 is fulfilled for the used frequency:
    - Set the variable TRIGGERED\_2F\_EVENT to FALSE;

Triggering condition:

Equation 1:

$$Q_{Used} \geq T_{Used\ 2f} + H_{2f} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used\ 2f}$  is the absolute threshold that applies for the used frequency and event 2f.

$H_{2f}$  is the hysteresis parameter for the event 2f.

Leaving triggered state condition:

Equation 2:

$$Q_{Used} < T_{Used2f} - H_{2f} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used2f}$  is the absolute threshold that applies for the used frequency and event 2f.

$H_{2f}$  is the hysteresis parameter for the event 2f.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of the currently used frequency is above the value of the IE "Threshold used frequency" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains at least the best primary CPICH (FDD) or primary CCPCH (TDD) on the used frequency.

## 14.11 UE autonomous update of virtual active set on non-used frequency (FDD only)

In the text that follows:

- A "non-used frequency" is a frequency that the UE has been ordered to measure upon but is not used for the connection. A "used frequency" is a frequency that the UE has been ordered to measure upon and is also currently used for the connection.
- "A non-used frequency (resp. cell) considered in an inter-frequency measurement" shall be understood as a non-used frequency (resp. cell) included in the list of cells pointed at in the IE "cells for measurement" if it was received for that measurement, or otherwise as a non-used frequency (resp. cell) included in the "Inter-frequency cell info" part of the variable CELL\_INFO\_LIST.

Within the measurement reporting criteria field in the MEASUREMENT CONTROL message the UTRAN notifies the UE which events should trigger a measurement report. For event-triggered inter frequency measurements it is possible to specify intra-frequency measurements reporting events for support of maintenance of an active set associated with a non-used frequency considered in that measurement, a "virtual active set" and used in the evaluation of the frequency quality estimates. The "initial virtual active set" for a frequency is the virtual active set that is associated to that frequency just after a message was received that sets up or modifies the inter-frequency measurement

A "non-used frequency" is a frequency that the UE has been ordered to measure upon but are not used by the active set. A "used frequency" is a frequency that the UE has been ordered to measure upon and is also currently used for the connection.

The autonomous update is controlled by the IE "UE autonomous update mode" that can be set to the following values:

- On: Do the autonomous updates of the "virtual active set" according to the described rules below and also report the events that trigger the update of the "virtual active set".
- On with no reporting: Do the autonomous updates of the "virtual active set" according to the described rules below.
- Off: Only report the events and do no updates of the "virtual active set" unless ordered to do so by the IE "Inter-frequency set update".

If the IE "UE autonomous update mode" is set to "on" or "on with no reporting" the UE shall evaluate the following intra-frequency events and update the "virtual active set" associated with the frequency measured upon, according to the following rules:

The way the virtual active sets are initiated and updated for the non-used frequencies considered in an inter-frequency measurement is described in the two sections below, and depends on whether the IE "intra-frequency reporting criteria" is stored for the inter-frequency measurement or not. In case that IE is not stored, the IE "intra-frequency measurement" stored in other measurements of type intra-frequency shall be used.

### 14.11.1 Initial virtual active set

The way the UE shall act when a MEASUREMENT CONTROL message is received that sets up or modifies an inter-frequency measurement, and that includes the IE "Inter-frequency set update" and/or the IE "Intra-Frequency measurement reporting quantity" is described below.

- If the IE "Intra-Frequency measurement reporting criteria" is included in the MEASUREMENT CONTROL message, or if it was previously stored and if the IE "Inter-frequency set update" was included in the MEASUREMENT CONTROL message:
- If the IE "UE autonomous update mode" received or previously stored is set to "on" or "on with no reporting":
- For each non-used frequency  $F_i$  considered in the measurement, the initial virtual active set shall include the  $N_i$  cells that have either the greatest downlink  $E_c/N_0$ , the greatest downlink RSCP after despreading, or the lowest pathloss (depending on what is indicated in the IE "inter-frequency measurement quantity"), among the cells on frequency  $F_i$  considered in that inter-frequency measurement, where:

- if event 1a is configured in the "Intra-Frequency measurement reporting criteria":

$$N_i = \min(N_{1a}, N_{Cells\ F_i}) \text{ if } N_{1a} \neq 0 \text{ and } N_i = N_{Cells\ F_i} \text{ otherwise.}$$

where:

$N_{1a}$  is the "Reporting deactivation threshold" included in the "Intra-Frequency measurement" IE received for that inter-frequency measurement for event 1a.

$N_{Cells\ F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.

- else if event 1c is configured in the "Intra-Frequency measurement reporting criteria":

$$N_i = \min(N_{1c}, N_{Cells\ F_i}) \text{ if } N_{1c} \neq 0 \text{ and } N_i = N_{Cells\ F_i} \text{ otherwise.}$$

where:

$N_{1c}$  is the "Replacement activation threshold" included in the "Intra-Frequency measurement" IE received for that inter-frequency measurement for event 1c.

$N_{Cells F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.

- else:

$$N_i = N_{Cells F_i}$$

where:

$N_{Cells F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.

- If the IE “UE autonomous update mode” received or previously stored is set to “on”:
  - If event 1a is configured in the “Intra-Frequency measurement reporting criteria”:
    - Send a MEASUREMENT REPORT with IEs set as follows:
      - The Measurement identity to the identity of the inter-frequency measurement.
      - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1a, and in “Cell measurement event results” the CPICH info of all the cells included in a virtual active set of the non-used frequency considered in the inter-frequency measurement.
      - The IE “measured results” shall not be included.
  - Else if event 1c is configured in the “Intra-Frequency measurement reporting criteria”:
    - Send a measurement report with IEs set as follows:
      - The Measurement identity to the identity of the inter-frequency measurement.
      - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1c, and in “Cell measurement event results” the CPICH info of all the cells included in the virtual active set of the frequency considered in the inter-frequency measurement.
      - The IE “measured results” shall not be included.
- If the IE “Inter-frequency set update” is included in the message and if the IE “UE autonomous update mode” is set to “Off”:
  - If the IE “Measurement command” is set to “Modify”, if the value previously stored for the IE “UE autonomous update set” was also “Off” and if the IE “Intra-frequency measurement reporting criteria” was not included in the message:
    - Apply the modifications indicated in the “Inter-frequency set update” to the virtual active set that was valid before the message was received for the non-used frequency considered in that inter-frequency measurement.
  - Otherwise:

- Remove the possibly existing virtual active set of the non-used frequency considered in that measurement and set the initial virtual active set for it according to the “Inter-frequency set update” included in the message.
- If the IE “Inter-frequency set update” is not included in the message and if the IE “UE autonomous update mode” stored for the inter-frequency measurement is set to “Off”:
  - Remove the possibly existing virtual active set of the non-used frequency considered in that measurement, and consider the virtual active set for it as empty.
- If the IE “Intra-Frequency measurement reporting criteria” was not included in the MEASUREMENT CONTROL message, the UE shall
  - If the IE “UE autonomous update mode” is set to “on” or “on with no reporting”:
    - For each non-used frequency  $F_i$  considered in the measurement, the initial virtual active set shall include the  $N_i$  cells that have either the greatest downlink  $E_c/N_0$  or the greatest downlink RSCP after despreading or the lowest pathloss (depending on what is indicated in the IE “inter-frequency measurement quantity”), among the cells on frequency  $F_i$  considered in that inter-frequency measurement, where:
      - if event 1a is configured for the used frequency in an intra-frequency measurement:
        - if the “Reporting deactivation threshold” included in the

$$N_i = \min(N_{Ia}, N_{Cells\ F_i}) \text{ if } N_{Ia} \neq 0 \text{ and } N_i = N_{Cells\ F_i} \text{ otherwise.}$$
with:

$N_{Ia}$  is the “Reporting deactivation threshold” included in the intra-frequency measurement for the first event 1a defined in the intra-frequency measurement with the lowest identity.

$N_{Cells\ F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.
      - else if event 1c is configured for the used frequency in an intra-frequency measurement:

$$N_i = \min(N_{Ic}, N_{Cells\ F_i}) \text{ if } N_{Ic} \neq 0 \text{ and } N_i = N_{Cells\ F_i} \text{ otherwise.}$$
where:

$N_{Ic}$  is the “Replacement activation threshold” included in the “Intra-Frequency measurement” for the first event 1c defined in the intra-frequency measurement with the lowest identity.

$N_{Cells\ F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.
    - else:

$$N_i = N_{\text{Cells } F_i}$$

where:

$N_{\text{Cells } F_i}$  is the number of cells on frequency  $F_i$  considered in that inter-frequency measurement.

- If the IE “UE autonomous update mode” is set to “on”:
  - If event 1a is configured for the used frequency in an intra-frequency measurement:
    - Send a measurement report with IEs set as follows:
      - The Measurement identity to the identity of the inter-frequency measurement.
      - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1a, and in “Cell measurement event results” the CPICH info of all the cells included in the initial virtual active set of the non-used frequency considered in that measurement.
      - The IE “measured results” shall not be included.
  - Else if event 1c is configured for the used frequency in an intra-frequency measurement:
    - Send a measurement report with IEs set as follows:
      - The Measurement identity to the identity of the inter-frequency measurement.
      - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1c, and in “Cell measurement event results” the CPICH info of all the cells included in the virtual active set of the non-used frequency considered in that measurement.
      - The IE “measured results” shall not be included.
- If the IE “UE autonomous update mode” is set to “off”:
  - Set the initial virtual active set of the non-used frequency considered in that inter-frequency measurement according to what is included in the “Inter-frequency set update” included in the message. If that IE was not received, the initial virtual active set for the frequencies considered in that measurement shall be empty.

### 14.11.2 Virtual active set update during an inter-frequency measurement

- if the IE “Intra-frequency measurement reporting criteria” is stored for an inter-frequency measurement, the UE shall:
  - if Event 1a is configured in that IE, shall make the UE shall, when this event is triggered (according to the criteria described in subclause 14.2.1.1) by a cell allowed to affect the



reporting range (i.e. not included in the IE “Cells forbidden to affect reporting range” if that IE is included) for a non-used frequency considered in that measurement:

- if the “Reporting deactivation threshold” is equal to 0, or if the “Reporting deactivation threshold” is different from 0 and the number of cells included in the virtual active set for that frequency is less than the “Reporting deactivation threshold”:
  - if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” add the primary CPICH that enters the reporting range to the "virtual active set" \_;
  - if the IE "UE autonomous update mode" is set to “on” or “off”, send a measurement report with IEs set as below:
    - The Measurement identity to the identity of the inter-frequency measurement.
    - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1a, and in “Cell measurement event results” the CPICH info of the cell that triggered the event.
    - The IE “measured results” shall not be included.
- if Event 1b was configured, shall make the UE shall when this event is triggered (according to the criteria described in subclause 14.2.1.2) by a cell allowed to affect the reporting range (i.e. not included in the IE “Cells forbidden to affect reporting range” if that IE is included) for a non-used frequency considered in that measurement:
  - if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” and if the number of cells included in the virtual active set is greater than 1, remove the a primary CPICH that leaves the reporting range from the "virtual active set" \_;
  - if the IE "UE autonomous update mode" is set to “on” or “off”, send a measurement report with IEs set as below:
    - The Measurement identity to the identity of the inter-frequency measurement.
    - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1b, and in “Cell measurement event results” the CPICH info of the cell that triggered the event.
    - The IE “measured results” shall not be included.
- if Event 1c was configured, shall make the UE shall when this event is triggered by a cell for a frequency considered in that measurement (according to the criteria described in subclause 14.2.1.3):
  - if the “Reporting activation threshold” is equal to 0, or if the “Reporting activation threshold” is different from 0 and the number of cells included in the virtual active set for that frequency is greater than or equal to the “Reporting activation threshold”:
    - if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” replace an active primary CPICH in the "virtual active set" with a non-active primary CPICH that hasve become better than the active primary CPICH \_;
    - if the IE "UE autonomous update mode" is set to “on” or “off”, send a measurement report with IEs set as below:
      - The Measurement identity to the identity of the inter-frequency measurement.
      - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1c, and in “Cell measurement event

results” the first entry as the CPICH info of the cell that triggered the event, and the rest of the entries as the cells that were in the virtual active set before the event occurred and that are worse than the cell that triggered the event, in the order of their measured value (best one first).

- The IE “measured results” shall not be included.

- If the IE “Intra-frequency measurement reporting criteria” is not stored for that inter-frequency measurement, the UE shall:

- apply the events of type 1a, 1b and 1c that were defined for the used frequency in other stored measurements of type “intra-frequency” at the time the inter-frequency measurement was set up and update the virtual active set for the non-used frequencies considered in that measurement according to the following rules:

- if several events of type 1a (resp. 1b,1c) were defined for the used frequency when the inter-frequency measurement was set up, only the first 1a event (resp 1b, 1c) that was defined in the measurement with the lowest measurement identity shall apply to the non-used frequencies.

- all the cells considered in the inter-frequency measurements shall be able to affect the reporting range for event 1a and 1b. (i.e. the IE “Cells forbidden to affect reporting range” possibly stored for the intra-frequency measurements on the used frequency does not apply to the non-used frequencies considered in the inter-frequency measurement).

- The IEs “amount of reporting” and “reporting interval” that were stored for the intra-frequency measurements on the used frequency shall not be considered if reports of the virtual active set updates are needed.

- if event 1a is applicable to the non-used frequencies considered in the inter-frequency measurement, the UE shall, when this event is triggered (according to the criteria described in subclause 14.2.1.1) by a cell for a non-used frequency considered in that measurement:

- if the “Reporting deactivation threshold” is equal to 0, or if the “Reporting deactivation threshold” is different from 0 and the number of cells included in the virtual active set for that frequency is less than the “Reporting deactivation threshold”

- if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” add the primary CPICH that enters the reporting range to the "virtual active set"

- if the IE "UE autonomous update mode" is set to “on” or “off”, send a measurement report with IEs set as below:

- The Measurement identity to the identity of the inter-frequency measurement.

- The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1a, and in “Cell measurement event results” the CPICH info of the cell that triggered the event.

- The IE “measured results” shall not be included.

- if event 1b is applicable for the non-used frequencies considered in that inter-frequency measurement, the UE shall when this event is triggered (according to the criteria described in subclause 14.2.1.2) by a cell for a non-used frequency considered in that measurement:

- if the IE “UE autonomous update mode” is set to “on” or “on with no reporting” and if the number of cells included in the virtual active set is greater than 1, remove the primary CPICH that leaves the reporting range from the "virtual active set"

- if the IE "UE autonomous update mode" is set to "on" or "off", send a measurement report with IEs set as below:
  - The Measurement identity to the identity of the inter-frequency measurement.
  - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1b, and in "Cell measurement event results" the CPICH info of the cell that triggered the event.
  - The IE "measured results" shall not be included.
- if event 1c is applicable for the non-used frequencies considered in that inter-frequency measurement, the UE shall when this event is triggered (according to the criteria described in subclause 14.2.1.3) by a cell for a non-used frequency considered in that measurement:
  - if the "Reporting activation threshold" is equal to 0, or if the "Reporting activation threshold" is different from 0 and the number of cells included in the virtual active set for that frequency is greater than or equal to the "Reporting activation threshold"
    - if the IE "UE autonomous update mode" is set to "on" or "on with no reporting" replace an active primary CPICH in the "virtual active set" with a non-active primary CPICH that has become better than the active primary CPICH
  - if the IE "UE autonomous update mode" is set to "on" or "off", send a measurement report with IEs set as below:
    - The Measurement identity to the identity of the inter-frequency measurement.
    - The CHOICE event result in the IE Event results to Intra-frequency measurement event results, Intra-frequency event identity to 1c, and in "Cell measurement event results" the first entry as the CPICH info of the cell that triggered the event, and the rest of the entries as the cells that were in the virtual active set before the event occurred and that are worse than the cell that triggered the event, in the order of their measured value (best one first).
    - The IE "measured results" shall not be included.

## CHANGE REQUEST

⌘ **25.331 CR 923** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Inter-RAT measurement corrections		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 2001-08-29
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
<i>Use <u>one</u> of the following categories:</i>		<i>Use <u>one</u> of the following releases:</i>	
<b>F</b> (correction)		2 (GSM Phase 2)	
<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)	
<b>B</b> (addition of feature),		R97 (Release 1997)	
<b>C</b> (functional modification of feature)		R98 (Release 1998)	
<b>D</b> (editorial modification)		R99 (Release 1999)	
Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		REL-4 (Release 4)	
		REL-5 (Release 5)	

<b>Reason for change:</b>	⌘ Ambiguous measurement handling need to be corrected.  A strict event description for all measurements is important for aligned UE behaviour and a possibility for the network to rely on measurement reports.
<b>Summary of change:</b>	⌘ This draft CR is an update of document R2-011836. The updated parts are marked in yellow. The 3GPP template is now used for the CR. <b>Changes marked in green are sections from R2-012105</b>  <ol style="list-style-type: none"><li>8.6.7.6, 10.3.7.26 and 10.3.7.32: it is clarified that pathloss cannot be used for GSM measurement, since the output power was removed from the information provided to the UE in the Inter-RAT cell info list (10.3.7.23). The UTRAN estimated quality cannot be reported in the Inter-RAT measured results list (10.3.7.26), and it was thus clarified in 8.6.7.6 and 10.3.7.32 that the IE "UTRAN estimated quality" is not used in R99.</li><li>8.6.7.9: it is clarified that when the IE "Reporting Cell Status" is not received for an inter-RAT measurement, the UE shall not include any measurement results in the report it sends to UTRAN.</li><li>10.3.7.27 and 10.3.7.30: the IE "reporting cell status" can in principle be included in "Inter-RAT measurement" in the case of "periodical reporting" or "no reporting", but since there is no UTRAN related information in the Inter-RAT measured results list (10.3.7.26), this cannot be used in R99. The same thing holds for 10.3.7.30. That was clarified.</li><li>10.3.7.61 and 11.3: when the different possible choices in the IE "Reporting Cell Status" can be used is not really clear as this IE can be used within IEs "intra-frequency measurement", "inter-frequency measurement" and "inter-RAT measurement". For each choice, it is clarified whether it applies to intra-</li></ol>

	<p>frequency/inter-frequency/inter-RAT measurements. As with the existing text, no choice applies to the inter-RAT case, and since the number of reported cells for inter-RAT measurements is not clear (especially in the case of periodical reporting), it is proposed to allow for one of the choices to be used also in the inter-RAT case. The name of that choice is changed in ASN.1, to make it consistent.</p> <p>5. 13.4.xx: Different variables were added that are used in the text that follows to describe the 3x events.</p> <p>6. In chapter 14.3, an extensive description of the 3x events was added.</p> <p>This CR has isolated impact on inter-RAT frequency measurement reporting.</p>									
<b>Consequences if not approved:</b>	⌘ Ambiguities in the way the inter-RAT measurements shall be performed, and unexpected UE behaviour.									
<b>Clauses affected:</b>	⌘ 8.4.1.7.3, 8.6.7.6, 8.6.7.9, 10.3.7.26, 10.3.7.29, 10.3.7.32, 10.3.7.61, 11.3, 13.4.27f10 (new), 13.4.27f11 (new), 13.4.27f12 (new), 13.4.27f13 (new), 14.3, 14.3.0a (new), 14.3.0b (new), 14.3.0c (new), 14.3.1, 14.3.1.1, 14.3.1.2, 14.3.1.3, 14.3.1.4									
<b>Other specs affected:</b>	<table border="0"> <tr> <td>⌘ <input type="checkbox"/></td> <td>Other core specifications</td> <td>⌘ 25.331 v4.1.0, CR 924</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Test specifications</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>O&amp;M Specifications</td> <td></td> </tr> </table>	⌘ <input type="checkbox"/>	Other core specifications	⌘ 25.331 v4.1.0, CR 924	<input type="checkbox"/>	Test specifications		<input type="checkbox"/>	O&M Specifications	
⌘ <input type="checkbox"/>	Other core specifications	⌘ 25.331 v4.1.0, CR 924								
<input type="checkbox"/>	Test specifications									
<input type="checkbox"/>	O&M Specifications									
<b>Other comments:</b>	⌘									

### 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](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

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

### 8.4.1.7.3 Inter-RAT measurement

Upon transition from CELL\_FACH to CELL\_DCH state, the UE shall:

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

### 8.6.7.6 Inter-RAT reporting quantity

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

- store the content of the IE to the variable MEASUREMENT\_IDENTITY.

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

- if the UE has not confirmed the BSIC of the measured cell:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" is active, the UE is not required to include the "inter-RAT cell id" nor "Observed time difference to GSM cell" in the IE "Inter-RAT measured results list", when a MEASUREMENT REPORT is triggered.
- if the UE has confirmed the BSIC of the measured cell, then:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" nor "BSIC re-confirmation" is active, the UE is not required to include the "inter-RAT cell id" nor "Observed time difference to GSM cell" in the IE "Inter-RAT measured results", when a MEASUREMENT REPORT is triggered. If no compressed mode pattern sequence with measurement purpose "GSM carrier RSSI measurements" is active, the UE may include "inter-RAT cell id" or "Observed time difference to GSM cell" in MEASUREMENT REPORT without "GSM carrier RSSI" even if it is defined in the IE "Inter-RAT reporting quantity".

~~if IE "Pathloss" is set to "TRUE":~~

~~set the variable CONFIGURATION\_INCOMPLETE to TRUE;~~

~~if the IE "UTRAN estimated quantity" is set to "TRUE":~~

~~ignore that IE;~~

if IE "Observed time difference to GSM cell" is set to "TRUE":

- include optional IE "Observed time difference to GSM cell" with the value set to the time difference to that GSM cell for the GSM cells that have a BSIC that is "verified", and that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list". Observed time difference to GSM cells with "non-verified" BSIC shall not be included;

if IE "GSM Carrier RSSI" is set to "TRUE":

- include optional IE "GSM Carrier RSSI" with a value set to the measured RXLEV to that GSM cell in IE "Inter-RAT measured results list". If no compressed mode pattern sequence specified with measurement purpose "GSM carrier RSSI measurements" is active, the UE is not required to include the "GSM carrier RSSI" in the IE "Inter-RAT measured results list", when a MEASUREMENT REPORT is triggered;

if the BSIC of reported GSM cell is "verified":

- set the CHOICE BSIC to "Verified BSIC" and IE "inter-RAT cell id" to the value that GSM cell had in the IE "Inter-RAT cell info list";
- if the BSIC of reported GSM cell is "non-verified":
  - set the CHOICE BSIC to "Non verified BSIC" and the IE "BCCH ARFCN" to the value of that GSM cells ARFCN;

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

### 8.6.7.9 Reporting Cell Status

If the IE "Reporting Cell Status" is received, the UE shall set the IE "Measured Results" in MEASUREMENT REPORT as follows. The UE shall:

- for intra-frequency measurement and inter-frequency measurement:
  - include the IE "Cell Measured Results" for cells that satisfy the condition (such as "Report cells within active set") specified in "Reporting Cell Status", in descending order by the measurement quantity;
  - the maximum number of the IE "Cell Measured Results" to be included in the IE "Measured Results" is the number specified in "Reporting Cell Status".

If the IE "Reporting Cell Status" is not received for intra-frequency, ~~or~~ inter-frequency measurement, or inter-RAT measurement, the UE shall:

- exclude the IE "cell measured results" for any cell in MEASUREMENT REPORT.

### 10.3.7.26 Inter-RAT measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT measurement results	OP	1 to <maxOther RAT>		
>CHOICE <i>system</i>	MP			At least one spare value needed
>>GSM				
>>>Measured GSM cells	MP	1 to <maxReportedGSMCells>		
>>>>GSM carrier RSSI	OP		bit string(6)	RXLEV, [46]. The RSSI bits are numbered b0 to b5, where b0 is the least significant bit.
>>>>Pathloss	OP		Integer(46..158)	In dB
>>>>CHOICE <i>BSIC</i>	MP			
>>>>>Verified BSIC				
>>>>>>inter-RAT cell id	MP		Integer(0..<maxCellMeasurements>-1)	
>>>>>>Non verified BSIC				
>>>>>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
>>>>>>>Observed time difference to GSM cell	OP		Observed time difference to GSM cell 10.3.7.52	

### 10.3.7.29 Inter-RAT measurement quantity

The quantity the UE shall measure in case of inter-RAT measurement. It also includes the filtering of the measurements.



Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement quantity for UTRAN quality estimate	OP		Intra-frequency measurement quantity 10.3.7.38	
CHOICE <i>system</i>	MP			
>GSM				
>>Measurement quantity	MP		Enumerated(GSM Carrier RSSI <sub>1</sub> Pathloss)	
>>Filter coefficient	MP		Filter coefficient 10.3.7.9	
>>BSIC verification required	MP		Enumerated(required, not required)	
>IS2000				
>>TADD $E_c/I_0$	MP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.6 of TIA/EIA/IS-2000.5
>>TCOMP $E_c/I_0$	MP		Integer(0..15)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>SOFT SLOPE	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.3 and 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>ADD_INTERCEPT	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5

Also, this The IE "BSIC verification required" must be set to "required" if IE "Observed time difference to GSM cell" in IE "Inter-RAT reporting quantity" is set to "true".

### 10.3.7.32 Inter-RAT reporting quantity

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UTRAN estimated quality	MP		Boolean	<a href="#">This parameter is not used in this release and should be set to FALSE.</a>
CHOICE <i>system</i>	MP			
>GSM				
>>Pathloss	MP		Boolean	
>>Observed time difference to GSM cell	MP		Boolean	
>>GSM Carrier RSSI	MP		Boolean	

### 10.3.7.61 Reporting Cell Status

Indicates maximum allowed number of cells to report and whether active set cells and/or virtual active set cells and/or monitored set cells on and/or detected set cells used frequency and/or monitored set cells on non used frequency should/should not be included in the IE "Measured results".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>reported cell</i>	MP			
>Report cells within active set				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set cells on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within active set and/or monitored set cells on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within detected set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set and/or detected set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report all active set cells + cells within monitored set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within detected set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>

>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within monitored set and/or detected set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report cells within virtual active set				<a href="#">This choice is not valid for intra-frequency or inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report cells within monitored set on non-used frequency				<a href="#">This choice is not valid for intra-frequency or inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report cells within monitored and/or active set on non-used frequency				<a href="#">This choice is not valid for intra-frequency or inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report all virtual active set cells + cells within monitored set on non-used frequency				<a href="#">This choice is not valid for intra-frequency or inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report cells within active set or within virtual active set <a href="#">or of the other RAT</a>				
>>Maximum number of reported cells	MP		Integer (1..12)	
>Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Integer(1..12)	

# 11 Message and Information element abstract syntax (with ASN.1)

< \*\*\* Unecessary Definitions Removed \*\*\* >

## 11.3 Information element definitions

```
-- *****
--
--     MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- *****
GSM-MeasuredResults ::=          SEQUENCE {
    gsm-CarrierRSSI              GSM-CarrierRSSI          OPTIONAL,
    dummy pathloss              INTEGER (46..158) Pathloss          OPTIONAL,
    bsicReported                 BSICReported,
    observedTimeDifferenceToGSM   ObservedTimeDifferenceToGSM  OPTIONAL
}

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

InterRATMeasuredResults ::=     CHOICE {
    gsm                               GSM-MeasuredResultsList,
    spare                              NULL
}

InterRATReportingQuantity ::=   SEQUENCE {
    utran-EstimatedQuality             BOOLEAN,
    ratSpecificInfo                   CHOICE {
        gsm                            SEQUENCE {
            dummypathloss          BOOLEAN,
            observedTimeDifferenceGSM   BOOLEAN,
            gsm-Carrier-RSSI           BOOLEAN
        }
    }
}

MeasurementQuantityGSM ::=      ENUMERATED {
    gsm-CarrierRSSI,
    dummypathloss
}

ReportingCellStatus ::=        CHOICE {
    withinActiveSet                   MaxNumberOfReportingCellsType1,
    withinMonitoredSetUsedFreq        MaxNumberOfReportingCellsType1,
    withinActiveAndOrMonitoredUsedFreq MaxNumberOfReportingCellsType1,
    withinDetectedSetUsedFreq         MaxNumberOfReportingCellsType1,
    withinMonitoredAndOrDetectedUsedFreq MaxNumberOfReportingCellsType1,
    allActiveplusMonitoredSet         MaxNumberOfReportingCellsType3,
    allActivePlusDetectedSet          MaxNumberOfReportingCellsType3,
    allActivePlusMonitoredAndOrDetectedSet MaxNumberOfReportingCellsType3,
}
```

```

withinVirtualActSet                MaxNumberOfReportingCellsType1,
withinMonitoredSetNonUsedFreq      MaxNumberOfReportingCellsType1,
withinMonitoredAndOrActiveSetNonUsedFreq
                                   MaxNumberOfReportingCellsType1,
allVirtualActSetplusMonitoredSetNonUsedFreq
                                   MaxNumberOfReportingCellsType3,
WithinActSetOrVirtualActSet-InterRATcells
                                   MaxNumberOfReportingCellsType2,
withinActSetAndOrMonitoredUsedFreqOrMonitoredNonUsedFreq
                                   MaxNumberOfReportingCellsType2
}

```

### 13.4.27f10 TRIGGERED 3A EVENT

This variable contains information about a 3a event that has been configured in the UE. There is one such variable per event 3a configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
CHOICE system	OP			
>GSM				
>>CHOICE BS/C	MP			
>>>Verified BSIC		0 to <maxCellMeas>		
>>>>Inter-RAT cell id	MP		Integer(0..<maxCellMeas>-1)	
>>>Non verified BSIC		0 to <maxCellMeas>		
>>>>BCCH ARFCN	MP		Integer (0..1023)	

### 13.4.27f11 TRIGGERED 3B EVENT

This variable contains information about a 3b event that has been configured in the UE. There is one such variable per event 3b configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
CHOICE system	OP			
>GSM				
>>CHOICE BS/C	MP			
>>>Verified BSIC		0 to <maxCellMeas>		
>>>>Inter-RAT cell id	MP		Integer(0..<maxCellMeas>-1)	
>>>Non verified BSIC		0 to <maxCellMeas>		
>>>>BCCH ARFCN	MP		Integer (0..1023)	

## 13.4.27f12 TRIGGERED 3C EVENT

This variable contains information about a 3c event that has been configured in the UE. There is one such variable per event 3c configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
CHOICE <i>system</i>	OP			
>GSM				
>>CHOICE <i>BSIC</i>	MP			
>>>Verified <i>BSIC</i>		0 to <maxCellMeas>		
>>>>Inter-RAT cell id	MP		Integer(0..<maxCellMeas>-1)	
>>>Non verified <i>BSIC</i>		0 to <maxCellMeas>		
>>>>BCCH ARFCN	MP		Integer (0..1023)	

## 13.4.27f13 BEST CELL 3D EVENT

This variable contains information about a 3d event that has been configured in the UE. There is one such variable per event 3a configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
CHOICE <i>system</i>				
>GSM				
>>CHOICE <i>BSIC</i>	MP			
>>>Verified <i>BSIC</i>				
>>>>Inter-RAT cell id	MP		Integer(0..<maxCellMeas>-1)	
>>>Non verified <i>BSIC</i>				
>>>>BCCH ARFCN	MP		Integer (0..1023)	

## 14.3 Inter-RAT measurements

### 14.3.0a Inter-RAT measurement quantities

A measurement quantity is used by the UE to evaluate whether an inter-RAT measurement event has occurred or not.

The measurement quantity for UTRAN is used to compute the frequency quality estimate for the active set, as described in the next section, and can be:

1. Downlink Ec/No.

2. [Downlink received signal code power \(RSCP\) after despreading.](#)

[The measurement quantity for GSM can be:](#)

1. [GSM Carrier RSSI](#)

[A description of those values can be found in \[7\] and \[8\].](#)

### 14.3.0b Frequency quality estimate of the UTRAN frequency

The estimated quality of the active set in UTRAN in events 3a is defined as:

$$Q_{UTRAN} = 10 \cdot \text{Log} M_{UTRAN} = W \cdot 10 \cdot \text{Log} \left( \sum_{i=1}^{N_A} M_i \right) + (1 - W) \cdot 10 \cdot \text{Log} M_{Best},$$

The variables in the formula are defined as follows:

$Q_{UTRAN}$  is the estimated quality of the active set on the currently used UTRAN frequency.

$M_{UTRAN}$  is the estimated quality of the active set on currently used UTRAN frequency expressed in another unit.

$M_i$  is [the measurement result of cell i in the active set, according to what is indicated in the IE "Measurement quantity for UTRAN quality estimate"](#).

$N_A$  is the number of cells in the active set.

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

W is a parameter sent from UTRAN to UE.

[If the measurement result is CPICH-Ec/No  \$M\_{UTRAN}\$ ,  \$M\_i\$  and  \$M\_{Best}\$  are expressed as ratios](#)

[If the measurement result is CPICH-RSCP or PCCPCH-RSCP,  \$M\_{UTRAN}\$ ,  \$M\_i\$  and  \$M\_{Best}\$  are expressed in \[mW\]](#)

### 14.3.0c Inter-RAT reporting quantities

[The quantities that the UE shall report to UTRAN when the event is triggered for an inter-RAT measurement are given by the "Inter-RAT reporting quantity" IE stored for that measurement, and can be the following:](#)

- [In the case the other RAT is GSM:](#)
- [For GSM:](#)
  1. [Observed time difference to the GSM cell](#)
  2. [GSM carrier RSSI](#)

[A description of those values can be found in \[7\] and \[8\].](#)

### 14.3.1 Inter-RAT reporting events

Within the measurement reporting criteria field in the MEASUREMENT CONTROL message the UTRAN notifies the UE which events should trigger the UE to send a MEASUREMENT REPORT message.

~~Examples of inter-RAT reporting events that would be useful for inter-RAT handover evaluation are given below. Note that normally the UEs do not need to report all these events.~~ The listed events are the toolbox from which the UTRAN can choose the reporting events that are needed for the implemented handover evaluation function, or other radio network functions.

All events are measured with respect to one of the measurement quantities given in subclause 14.3.0a, and of the frequency quality estimate given in subclause 14.3.0b. ~~For UTRAN the measurement quantities are measured on the monitored primary common pilot channels (CPICH) in FDD mode and the monitored primary common control channels (PCCPCH) in TDD mode of the cell defined in the measurement object. For other RAT the measurement quantities are system specific. The measurement objects are the monitored primary common pilot channels (CPICH) in FDD mode and the monitored primary common control channels (PCCPCH) in TDD mode for UTRAN and objects specific for other systems.~~ A "used UTRAN frequency" is a frequency that the UE have been ordered to measure upon and is also currently used for the connection to UTRAN. "Other system" is e.g. GSM.

In the text below describing the events:

- "The BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement" shall be understood as the BCCH ARFCN and BSIC combinations of the inter-RAT cells pointed at in the IE "Cell for measurements" if it has been received for that inter-RAT measurement, or otherwise of the cells included in the "inter-RAT cell info" part of the variable CELL\_INFO\_LIST.
- "The BCCH ARFCNs considered in that inter-RAT measurement" shall be understood as the BCCH ARFCNs of the inter-RAT cells pointed at in the IE "Cell for measurements" if it has been received for that inter-RAT measurement, or otherwise of the cells included in the "inter-RAT cell info" part of the variable CELL\_INFO\_LIST.

#### 14.3.1.1 Event 3a: The estimated quality of the currently used UTRAN frequency is below a certain threshold **and** the estimated quality of the other system is above a certain threshold.

When an inter-RAT measurement configuring event 3a is set up, the UE shall create a variable TRIGGERED\_3A\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 3a is configured in the UE within a measurement, the UE shall:

- If the other RAT is GSM, and if IE "BSIC verification required" is set to "required":
- If equations 1 and 2 below have both been fulfilled during the time "Time to trigger" from the same instant, respectively for the used UTRAN frequency and for one or several GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
  - If the Inter-RAT cell id of any of those GSM cells is not stored in the variable TRIGGERED\_3A\_EVENT:
  - Store the Inter-RAT cell ids of the GSM cells that triggered the event and that were not previously stored in the variable TRIGGERED\_3A\_EVENT into that variable.
  - Send a measurement report with IEs set as below:



- In “inter-RAT measurement event result”: “inter-RAT event identity” to “3a”, “CHOICE BSIC” to “verified BSIC” and “Inter-RAT cell id” to the GSM cells that triggered the event (best one first);
- “measured results” and possible “additional measured results” according to 8.4.2;
- If equation 4 is fulfilled for a GSM cell whose inter-RAT cell id is stored in the variable TRIGGERED\_3A\_EVENT:
  - Remove the inter-RAT cell id of that GSM cell from the variable TRIGGERED\_3A\_EVENT
- If equation 3 is fulfilled for the used frequency in UTRAN:
  - Clear the variable TRIGGERED\_3A\_EVENT
- If the other RAT is GSM, and if IE “BSIC verification required” is set to “not required”:
  - If equations 1 and 2 below have been fulfilled during the time “Time to trigger” from the same instant, respectively for the used UTRAN frequency and for one or several BCCH ARFCNs considered in that inter-RAT measurement:
    - If any of those BCCH ARFCNs is not stored into the variable TRIGGERED\_3A\_EVENT:
      - Store the BCCH ARFCNs that triggered the event and that were not previously stored in the variable TRIGGERED\_3A\_EVENT into that variable;
      - Send a measurement report with IEs set as below:
        - In “inter-RAT measurement event result”: “inter-RAT event identity” to “3a”, “CHOICE BSIC” to “non verified BSIC” and “BCCH ARFCN” to BCCH ARFCNs that triggered the event (best one first);
        - “measured results” and possible “additional measured results” according to 8.4.2;
  - If equation 4 is fulfilled for a BCCH ARFCN that is stored in the variable TRIGGERED\_3A\_EVENT:
    - Remove that BCCH ARFCN from the variable TRIGGERED\_3A\_EVENT;
- If equation 3 is fulfilled for the used frequency in UTRAN:
  - Clear the variable TRIGGERED\_3A\_EVENT

Triggering conditions:

Equation 1:

$$Q_{Used} \leq T_{Used} - H_{3a} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used UTRAN frequency.

$T_{Used}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{3a}$  is the hysteresis parameter for event 3a.

Equation 2:

$$M_{Other\ RAT} \geq T_{Other\ RAT} + H_{3a}/2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3a}$  is the hysteresis parameter for event 3a.

Leaving triggered state conditions:

Equation 3:

$$Q_{Used} > T_{Used} + H_{3a}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used UTRAN frequency.

$T_{Used}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{3a}$  is the hysteresis parameter for event 3a.

Equation 4:

$$M_{Other\ RAT} < T_{Other\ RAT} - H_{3a}/2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3a}$  is the hysteresis parameter for event 3a.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of the currently used frequency is below the value of the IE "Threshold own system" and the hysteresis and time to trigger conditions are fulfilled and the estimated quality of the other system is above the value of the IE "Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system and the best primary CPICH (FDD) or primary CCPCH (TDD) on the used frequency.

14.3.1.2 Event 3b: The estimated quality of other system is below a certain threshold

When an inter-RAT measurement configuring event 3b is set up, the UE shall create a variable TRIGGERED\_3B\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 3b is configured in the UE within a measurement, the UE shall:

- If the other RAT is GSM, and if IE “BSIC verification required” is set to “required”:
  - If equation 1 below has been fulfilled during the time “time to trigger” for one or several GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
    - If the inter-RAT cell id of any of those GSM cell is not stored in the variable TRIGGERED\_3B\_EVENT:
      - Store the inter-RAT cell ids of the GSM cells that triggered the event and that were not previously stored in the variable TRIGGERED\_3B\_EVENT into that variable.
      - Send a measurement report with IEs set as below:
        - In “inter-RAT measurement event result”: “inter-RAT event identity” to “3b”, “CHOICE BSIC” to “verified BSIC” and “Inter-RAT cell id” to the GSM cells that triggered the event (worst one first);
        - “measured results” and possible “additional measured results” according to 8.4.2;
    - If equation 2 below is fulfilled for a GSM cell whose inter-RAT cell id is stored in the variable TRIGGERED\_3B\_EVENT:
      - Remove the inter-RAT cell id of that GSM cell from the variable TRIGGERED\_3B\_EVENT.
- If the other RAT is GSM, and if IE “BSIC verification required” is set to “not required”:
  - If equation 1 below has been fulfilled during the time “time to trigger” for one or several of the BCCH ARFCNs considered in that inter-RAT measurement:
    - If any of those BCCH ARFCN is not stored into the variable TRIGGERED\_3B\_EVENT:
      - Store the BCCH ARFCNs that triggered the event and that were not previously stored in the variable TRIGGERED\_3B\_EVENT into that variable;
      - Send a measurement report with IEs set as below:
        - In “inter-RAT measurement event result”: “inter-RAT event identity” to “3b”, “CHOICE BSIC” to “non verified BSIC” and “BCCH ARFCN” to BCCH ARFCNs that triggered the event (worst one first);
        - “measured results” and possible “additional measured results” according to 8.4.2;
    - If equation 2 below is fulfilled for a BCCH ARFCN that is stored in the variable TRIGGERED\_3B\_EVENT:
      - Remove that BCCH ARFCN from the variable TRIGGERED\_3B\_EVENT;

Triggering condition:

Equation 1:

$$M_{Other\ RAT} \leq T_{Other\ RAT} - H_{3b} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3b}$  is the hysteresis parameter for event 3b.

Leaving triggered state condition:

Equation 2:

$$M_{Other\ RAT} > T_{Other\ RAT} + H_{3b} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3b}$  is the hysteresis parameter for event 3b.

~~When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the estimated quality of the other system is below the value of the IE "Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system.~~

#### 14.3.1.3 Event 3c: The estimated quality of other system is above a certain threshold

When an inter-RAT measurement configuring event 3c is set up, the UE shall create a variable TRIGGERED\_3C\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 3c is configured in the UE within a measurement, the UE shall:

- If the other RAT is GSM, and if IE "BSIC verification required" is set to "required":
- If equation 1 below has been fulfilled during the time "time to trigger" for one or several GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
  - If the inter-RAT cell id of any of those GSM cell is not stored in the variable TRIGGERED\_3C\_EVENT:
    - Store the Inter-RAT cell ids of the GSM cells that triggered the event and that were not previously stored in the variable TRIGGERED\_3C\_EVENT into that variable;
    - Send a measurement report with IEs set as below:
      - In "inter-RAT measurement event result": "inter-RAT event identity" to "3c", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cells that triggered the event (best one first);
      - "measured results" and possible "additional measured results" according to 8.4.2;
  - If equation 2 below is fulfilled for a GSM cell whose inter-RAT cell id is stored in the variable TRIGGERED\_3C\_EVENT:

- Remove the inter-RAT cell id of that GSM cell from the variable TRIGGERED\_3C\_EVENT;
- If the other RAT is GSM, and if IE “BSIC verification required” is set to “not required”:
  - If equation 1 below has been fulfilled during the time “time to trigger” for one or several of the BCCH ARFCNs considered in that inter-RAT measurement:
    - If any of those BCCH ARFCN is not stored into the variable TRIGGERED\_3C\_EVENT:
      - Store the BCCH ARFCNs that triggered the event and that were not previously stored in the variable TRIGGERED\_3C\_EVENT into that variable;
      - Send a measurement report with IEs set as below:
        - In “inter-RAT measurement event result”: “inter-RAT event identity” to “3c”, “CHOICE BSIC” to “non verified BSIC” and “BCCH ARFCN” to BCCH ARFCNs that triggered the event (best one first);
        - “measured results” and possible “additional measured results” according to 8.4.2;
  - If equation 2 is fulfilled for a BCCH ARFCN that is stored in the variable TRIGGERED\_3C\_EVENT:
    - Remove that BCCH ARFCN from the variable TRIGGERED\_3C\_EVENT;

Triggering condition:

Equation 1:

$$M_{Other\ RAT} \geq T_{Other\ RAT} + H_{3c} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3c}$  is the hysteresis parameter for event 3c.

Leaving triggered state condition:

Equation 2:

$$M_{Other\ RAT} < T_{Other\ RAT} - H_{3c} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3c}$  is the hysteresis parameter for event 3c.

When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the estimated quality of the other system is above the value of the IE "Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system.

#### 14.3.1.4 Event 3d: Change of best cell in other system

When an inter-RAT measurement configuring event 3d is set up, the UE shall create a variable BEST\_CELL\_3D\_EVENT related to that measurement. This variable shall be deleted when the measurement is released.

When event 3d is configured in the UE within a measurement, the UE shall:

- If the other RAT is GSM, and if IE "BSIC verification required" is set to "required":
  - When the measurement is initiated or resumed:
    - store in the variable BEST\_CELL\_3D\_EVENT the Inter-RAT cell id of the GSM cell that has the best measured quantity among the GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement
    - send a measurement report with IE set as below:
      - in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cell that is stored in the variable BEST\_CELL\_3D\_EVENT
      - "measured results" and possible "additional measured results" according to 8.4.2;
  - If equation 1 has been fulfilled during the time "time to trigger" for a GSM cell that is different from the one stored in BEST\_CELL\_3D\_EVENT and that matches any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
    - store the Inter-RAT cell id of that GSM cell in the variable BEST\_CELL\_3D\_EVENT;
    - send a measurement report with IEs set as below:
      - in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cell is now stored in BEST\_CELL\_3D\_EVENT;
      - "measured results" and possible "additional measured results" according to 8.4.2;
- If the other RAT is GSM, and if IE "BSIC verification required" is set to "not required":
  - When the measurement is initiated or resumed:
    - store in the variable BEST\_CELL\_3D\_EVENT the BCCH ARFCN of the GSM cell that has the best measured quantity among the BCCH ARFCNs considered in that inter-RAT measurement
    - send a measurement report with IE set as below:
      - in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "non verified BSIC" and "BCCH ARFCN" to the BCH ARFCN that is stored in the variable BEST\_CELL\_3D\_EVENT;
      - "measured results" and possible "additional measured results" according to 8.4.2;

- If equation 1 below has been fulfilled during the time “time to trigger” for one of the BCCH ARFCNs considered in that inter-RAT measurement and different from the one stored in BEST\_CELL\_3D\_EVENT:
  - store the BCCH ARFCN of that GSM cell in the variable BEST\_CELL\_3D\_EVENT;
  - send a measurement report with IEs set as below:
    - in “inter-RAT measurement event result”: “inter-RAT event identity” to “3d”, “CHOICE BSIC” to “non verified BSIC” and “BCCH ARFCN” to the BCCH ARFCN that is now stored in the variable BEST\_CELL\_3D\_EVENT;
    - “measured results” and possible “additional measured results” according to 8.4.2;

Equation 1:

$$M_{New} \geq M_{Best} + H_{3d} / 2$$

The variables in the formula are defined as follows:

$M_{New}$  is the measurement quantity for a GSM cell that is not stored in the variable BEST\_CELL\_3D.

$M_{Best}$  is the measurement quantity for a GSM cell that is stored in the variable BEST\_CELL\_3D.

$H_{3d}$  is the hysteresis parameter for event 3d.

If any of the quality estimates for the cells in the other system becomes better than the quality estimate for the currently best cell in the other system, and event 3d has been ordered by UTRAN then this event shall trigger a report to be sent from the UE when the hysteresis and time to trigger conditions is fulfilled. The corresponding report contains (at least) information the best cell in the other system.

## CHANGE REQUEST

⌘ **25.331 CR 924** ⌘ 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  Radio Access Network  Core Network

<b>Title:</b>	⌘ Inter-RAT measurement corrections		
<b>Source:</b>	⌘ TSG-RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 2001-09-03
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
<i>Use <u>one</u> of the following categories:</i>		<i>Use <u>one</u> of the following releases:</i>	
<b>F</b> (correction)		2 (GSM Phase 2)	
<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)	
<b>B</b> (addition of feature),		R97 (Release 1997)	
<b>C</b> (functional modification of feature)		R98 (Release 1998)	
<b>D</b> (editorial modification)		R99 (Release 1999)	
Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		REL-4 (Release 4)	
		REL-5 (Release 5)	

<b>Reason for change:</b>	⌘ Ambiguous measurement handling need to be corrected.
	A strict event description for all measurements is important for aligned UE behaviour and a possibility for the network to rely on measurement reports.
<b>Summary of change:</b>	⌘ <ol style="list-style-type: none"><li>8.6.7.6, 10.3.7.26 and 10.3.7.32: it is clarified that pathloss cannot be used for GSM measurement, since the output power was removed from the information provided to the UE in the Inter-RAT cell info list (10.3.7.23). The UTRAN estimated quality cannot be reported in the Inter-RAT measured results list (10.3.7.26), and it was thus clarified in 8.6.7.6 and 10.3.7.32 that the IE "UTRAN estimated quality" is not used in R99.</li><li>8.6.7.9: it is clarified that when the IE "Reporting Cell Status" is not received for an inter-RAT measurement, the UE shall not include any measurement results in the report it sends to UTRAN.</li><li>10.3.7.27 and 10.3.7.30: the IE "reporting cell status" can in principle be included in "Inter-RAT measurement" in the case of "periodical reporting" or "no reporting", but since there is no UTRAN related information in the Inter-RAT measured results list (10.3.7.26), this cannot be used in R99. The same thing holds for 10.3.7.30. That was clarified.</li><li>10.3.7.61 and 11.3: when the different possible choices in the IE "Reporting Cell Status" can be used is not really clear as this IE can be used within IEs "intra-frequency measurement", "inter-frequency measurement" and "inter-RAT measurement". For each choice, it is clarified whether it applies to intra-frequency/inter-frequency/inter-RAT measurements. As with the existing text, no choice applies to the inter-RAT case, and since the number of reported cells for inter-RAT measurements is not clear (especially in the case of periodical reporting), it is</li></ol>



		<p>proposed to allow for one of the choices to be used also in the inter-RAT case. The name of that choice is changed in ASN.1, to make it consistent.</p> <p>5. 13.4.xx: Different variables were added that are used in the text that follows to describe the 3x events.</p> <p>6. In chapter 14.3, an extensive description of the 3x events was added.</p> <p>This CR has isolated impact on inter-RAT frequency measurement reporting.</p>
<b>Consequences if not approved:</b>	⌘	Ambiguities in the way the inter-RAT measurements shall be performed, and unexpected UE behaviour.
<b>Clauses affected:</b>	⌘	8.4.1.7.3, 8.6.7.6, 8.6.7.9, 10.3.7.26, 10.3.7.29, 10.3.7.32, 10.3.7.61, 11.3, 13.4.27f10 (new), 13.4.27f11 (new), 13.4.27f12 (new), 13.4.27f13 (new), 14.3, 14.3.0a (new), 14.3.0b (new), 14.3.0c (new), 14.3.1, 14.3.1.1, 14.3.1.2, 14.3.1.3, 14.3.1.4
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications      ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘	

### 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](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

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

### 8.4.1.7.3 Inter-RAT measurement

Upon transition from CELL\_FACH to CELL\_DCH state, the UE shall:

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

### 8.6.7.6 Inter-RAT reporting quantity

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

- store the content of the IE to the variable MEASUREMENT\_IDENTITY.

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

- if the UE has not confirmed the BSIC of the measured cell:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" is active, the UE is not required to include the "inter-RAT cell id" nor "Observed time difference to GSM cell" in the IE "Inter-RAT measured results list", when a MEASUREMENT REPORT is triggered.
- if the UE has confirmed the BSIC of the measured cell, then:
  - if no compressed mode pattern sequence specified with measurement purpose "Initial BSIC identification" nor "BSIC re-confirmation" is active, the UE is not required to include the "inter-RAT cell id" nor "Observed time difference to GSM cell" in the IE "Inter-RAT measured results", when a MEASUREMENT REPORT is triggered. If no compressed mode pattern sequence with measurement purpose "GSM carrier RSSI measurements" is active, the UE may include "inter-RAT cell id" or "Observed time difference to GSM cell" in MEASUREMENT REPORT without "GSM carrier RSSI" even if it is defined in the IE "Inter-RAT reporting quantity".

— if IE "Pathloss" is set to "TRUE":

— set the variable CONFIGURATION\_INCOMPLETE to TRUE;

- if the IE "UTRAN estimated quantity" is set to "TRUE":

- ignore that IE;

- if IE "Observed time difference to GSM cell" is set to "TRUE":

- include optional IE "Observed time difference to GSM cell" with the value set to the time difference to that GSM cell for the GSM cells that have a BSIC that is "verified", and that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list". Observed time difference to GSM cells with "non-verified" BSIC shall not be included;

- if IE "GSM Carrier RSSI" is set to "TRUE":

- include optional IE "GSM Carrier RSSI" with a value set to the measured RXLEV to that GSM cell in IE "Inter-RAT measured results list". If no compressed mode pattern sequence specified with measurement purpose "GSM carrier RSSI measurements" is active, the UE is not required to include the "GSM carrier RSSI" in the IE "Inter-RAT measured results list", when a MEASUREMENT REPORT is triggered;

- if the BSIC of reported GSM cell is "verified":

- set the CHOICE BSIC to "Verified BSIC" and IE "inter-RAT cell id" to the value that GSM cell had in the IE "Inter-RAT cell info list";
- if the BSIC of reported GSM cell is "non-verified":
  - set the CHOICE BSIC to "Non verified BSIC" and the IE "BCCH ARFCN" to the value of that GSM cells ARFCN;

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

### 8.6.7.9 Reporting Cell Status

If the IE "Reporting Cell Status" is received, the UE shall set the IE "Measured Results" in MEASUREMENT REPORT as follows. The UE shall:

- for intra-frequency measurement and inter-frequency measurement:
  - include the IE "Cell Measured Results" for cells that satisfy the condition (such as "Report cells within active set") specified in "Reporting Cell Status", in descending order by the measurement quantity;
  - the maximum number of the IE "Cell Measured Results" to be included in the IE "Measured Results" is the number specified in "Reporting Cell Status".

If the IE "Reporting Cell Status" is not received for intra-frequency, ~~or~~ inter-frequency measurement, or inter-RAT measurement, the UE shall:

- exclude the IE "cell measured results" for any cell in MEASUREMENT REPORT.

### 10.3.7.26 Inter-RAT measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Inter-RAT measurement results	OP	1 to <maxOther RAT>		
>CHOICE <i>system</i>	MP			At least one spare value needed
>>GSM				
>>>Measured GSM cells	MP	1 to <maxReportedGSMCells>		
>>>>GSM carrier RSSI	OP		bit string(6)	RXLEV, [46]. The RSSI bits are numbered b0 to b5, where b0 is the least significant bit.
>>>>Pathloss	OP		Integer(46..158)	ln dB
>>>>CHOICE <i>BSIC</i>	MP			
>>>>>Verified BSIC				
>>>>>>inter-RAT cell id	MP		Integer(0..<maxCellMeasurements>-1)	
>>>>>>Non verified BSIC				
>>>>>>>BCCH ARFCN	MP		Integer (0..1023)	[45]
>>>>>>>>Observed time difference to GSM cell	OP		Observed time difference to GSM cell 10.3.7.52	

### 10.3.7.29 Inter-RAT measurement quantity

The quantity the UE shall measure in case of inter-RAT measurement. It also includes the filtering of the measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Measurement quantity for UTRAN quality estimate	OP		Intra-frequency measurement quantity 10.3.7.38	
CHOICE <i>system</i>	MP			
>GSM				
>>Measurement quantity	MP		Enumerated(GSM Carrier RSSI <sub>f</sub> <a href="#">Pathloss</a> )	
>>Filter coefficient	MP		Filter coefficient 10.3.7.9	
>>BSIC verification required	MP		Enumerated(required, not required)	
>IS2000				
>>TADD $E_c/I_0$	MP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.6 of TIA/EIA/IS-2000.5
>>TCOMP $E_c/I_0$	MP		Integer(0..15)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>SOFT SLOPE	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.3 and 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
>>ADD_INTERCEPT	OP		Integer(0..63)	Admission criteria for neighbours, see subclause 2.6.6.2.5.2 of TIA/EIA/IS-2000.5

Also, this The IE “BSIC verification required” must be set to "required" if IE "Observed time difference to GSM cell" in IE "Inter-RAT reporting quantity" is set to "true".

### 10.3.7.32 Inter-RAT reporting quantity

For all boolean types TRUE means inclusion in the report is requested.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UTRAN estimated quality	MP		Boolean	<a href="#">This parameter is not used in this release and should be set to FALSE.</a>
CHOICE <i>system</i>	MP			
>GSM				
>>Pathloss	MP		Boolean	
>>Observed time difference to GSM cell	MP		Boolean	
>>GSM Carrier RSSI	MP		Boolean	

### 10.3.7.61 Reporting Cell Status

Indicates maximum allowed number of cells to report and whether active set cells and/or virtual active set cells and/or monitored set cells on and/or detected set cells used frequency and/or monitored set cells on non used frequency should/should not be included in the IE "Measured results".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE <i>reported cell</i>	MP			
>Report cells within active set				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set cells on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within active set and/or monitored set cells on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within detected set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report cells within monitored set and/or detected set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated(e1..e6)	
>Report all active set cells + cells within monitored set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within detected set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>

>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report all active set cells + cells within monitored set and/or detected set on used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report cells within virtual active set				<a href="#">This choice is not valid for intra-frequency or inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report cells within monitored set on non-used frequency				<a href="#">This choice is not valid for intra-frequency or inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report cells within monitored and/or active set on non-used frequency				<a href="#">This choice is not valid for intra-frequency or inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Integer(1..6)	
>Report all virtual active set cells + cells within monitored set on non-used frequency				<a href="#">This choice is not valid for intra-frequency or inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Enumerated (virtual/active set cells+1, virtual/active set cells+2, ..., virtual/active set cells+6)	
>Report cells within active set or within virtual active set <a href="#">or of the other RAT</a>				
>>Maximum number of reported cells	MP		Integer (1..12)	
>Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency				<a href="#">This choice is not valid for inter-RAT measurements</a>
>>Maximum number of reported cells	MP		Integer(1..12)	

---

# 11 Message and Information element abstract syntax (with ASN.1)

< \*\*\* Unecessary Definitions Removed \*\*\* >

## 11.3 Information element definitions

```
-- *****
--
--     MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- *****
GSM-MeasuredResults ::=          SEQUENCE {
|   gsm-CarrierRSSI              GSM-CarrierRSSI              OPTIONAL,
|   dummy_pathloss            INTEGER (46..158)Pathloss      OPTIONAL,
|   bsicReported                 BSICReported,
|   observedTimeDifferenceToGSM   ObservedTimeDifferenceToGSM  OPTIONAL
| }

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

InterRATMeasuredResults ::=      CHOICE {
|   gsm                                GSM-MeasuredResultsList,
|   spare                               NULL
| }

InterRATReportingQuantity ::=    SEQUENCE {
|   utran-EstimatedQuality             BOOLEAN,
|   ratSpecificInfo                    CHOICE {
|     gsm                               SEQUENCE {
|       dummy_pathloss          BOOLEAN,
|       observedTimeDifferenceGSM        BOOLEAN,
|       gsm-Carrier-RSSI                 BOOLEAN
|     }
| }
| }

MeasurementQuantityGSM ::=       ENUMERATED {
|   gsm-CarrierRSSI,
|   dummy_pathloss }

ReportingCellStatus ::=          CHOICE {
|   withinActiveSet                   MaxNumberOfReportingCellsType1,
|   withinMonitoredSetUsedFreq         MaxNumberOfReportingCellsType1,
|   withinActiveAndOrMonitoredUsedFreq MaxNumberOfReportingCellsType1,
|   withinDetectedSetUsedFreq         MaxNumberOfReportingCellsType1,
|   withinMonitoredAndOrDetectedUsedFreq MaxNumberOfReportingCellsType1,
|   allActiveplusMonitoredSet          MaxNumberOfReportingCellsType3,
|   allActivePlusDetectedSet           MaxNumberOfReportingCellsType3,
|   allActivePlusMonitoredAndOrDetectedSet MaxNumberOfReportingCellsType3,
```



```

withinVirtualActSet                MaxNumberOfReportingCellsType1,
withinMonitoredSetNonUsedFreq      MaxNumberOfReportingCellsType1,
withinMonitoredAndOrActiveSetNonUsedFreq
                                   MaxNumberOfReportingCellsType1,
allVirtualActSetplusMonitoredSetNonUsedFreq
                                   MaxNumberOfReportingCellsType3,
WithinActSetOrVirtualActSet-InterRATcells
                                   MaxNumberOfReportingCellsType2,
withinActSetAndOrMonitoredUsedFreqOrMonitoredNonUsedFreq
                                   MaxNumberOfReportingCellsType2
}

```

### 13.4.27f10 TRIGGERED 3A EVENT

This variable contains information about a 3a event that has been configured in the UE. There is one such variable per event 3a configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>CHOICE system</u>	<u>OP</u>			
> <u>GSM</u>				
>> <u>CHOICE BS/C</u>	<u>MP</u>			
>>> <u>Verified BSIC</u>		0 to <maxCellMeas>		
>>>> <u>Inter-RAT cell id</u>	<u>MP</u>		<u>Integer(0..&lt;maxCellMeas&gt;-1)</u>	
>>>> <u>Non verified BSIC</u>		0 to <maxCellMeas>		
>>>> <u>BCCH ARFCN</u>	<u>MP</u>		<u>Integer (0..1023)</u>	

### 13.4.27f11 TRIGGERED 3B EVENT

This variable contains information about a 3b event that has been configured in the UE. There is one such variable per event 3b configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
<u>CHOICE system</u>	<u>OP</u>			
> <u>GSM</u>				
>> <u>CHOICE BS/C</u>	<u>MP</u>			
>>> <u>Verified BSIC</u>		0 to <maxCellMeas>		
>>>> <u>Inter-RAT cell id</u>	<u>MP</u>		<u>Integer(0..&lt;maxCellMeas&gt;-1)</u>	
>>>> <u>Non verified BSIC</u>		0 to <maxCellMeas>		
>>>> <u>BCCH ARFCN</u>	<u>MP</u>		<u>Integer (0..1023)</u>	

## 13.4.27f12 TRIGGERED 3C EVENT

This variable contains information about a 3c event that has been configured in the UE. There is one such variable per event 3c configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
CHOICE <i>system</i>	OP			
>GSM				
>>CHOICE <i>BSIC</i>	MP			
>>>Verified <i>BSIC</i>		0 to <maxCellMeas>		
>>>>Inter-RAT cell id	MP		Integer(0..<maxCellMeas>-1)	
>>>Non verified <i>BSIC</i>		0 to <maxCellMeas>		
>>>>BCCH ARFCN	MP		Integer (0..1023)	

## 13.4.27f13 BEST CELL 3D EVENT

This variable contains information about a 3d event that has been configured in the UE. There is one such variable per event 3a configured in the UE.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>
CHOICE <i>system</i>				
>GSM				
>>CHOICE <i>BSIC</i>	MP			
>>>Verified <i>BSIC</i>				
>>>>Inter-RAT cell id	MP		Integer(0..<maxCellMeas>-1)	
>>>Non verified <i>BSIC</i>				
>>>>BCCH ARFCN	MP		Integer (0..1023)	

## 14.3 Inter-RAT measurements

### 14.3.0a Inter-RAT measurement quantities

A measurement quantity is used by the UE to evaluate whether an inter-RAT measurement event has occurred or not.

The measurement quantity for UTRAN is used to compute the frequency quality estimate for the active set, as described in the next section, and can be:

1. Downlink Ec/No.

2. [Downlink received signal code power \(RSCP\) after despreading.](#)

[The measurement quantity for GSM can be:](#)

1. [GSM Carrier RSSI](#)

[A description of those values can be found in \[7\] and \[8\].](#)

### 14.3.0b Frequency quality estimate of the UTRAN frequency

The estimated quality of the active set in UTRAN in events 3a is defined as:

$$Q_{UTRAN} = 10 \cdot \text{Log} M_{UTRAN} = W \cdot 10 \cdot \text{Log} \left( \sum_{i=1}^{N_A} M_i \right) + (1 - W) \cdot 10 \cdot \text{Log} M_{Best},$$

The variables in the formula are defined as follows:

$Q_{UTRAN}$  is the estimated quality of the active set on the currently used UTRAN frequency.

$M_{UTRAN}$  is the estimated quality of the active set on currently used UTRAN frequency expressed in another unit.

$M_i$  is [the measurement result of cell i in the active set, according to what is indicated in the IE "Measurement quantity for UTRAN quality estimate"](#).

$N_A$  is the number of cells in the active set.

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

W is a parameter sent from UTRAN to UE.

[If the measurement result is CPICH-Ec/No  \$M\_{UTRAN}\$ ,  \$M\_i\$  and  \$M\_{Best}\$  are expressed as ratios](#)

[If the measurement result is CPICH-RSCP or PCCPCH-RSCP,  \$M\_{UTRAN}\$ ,  \$M\_i\$  and  \$M\_{Best}\$  are expressed in \[mW\]](#)

### 14.3.0c Inter-RAT reporting quantities

[The quantities that the UE shall report to UTRAN when the event is triggered for an inter-RAT measurement are given by the "Inter-RAT reporting quantity" IE stored for that measurement, and can be the following:](#)

- [In the case the other RAT is GSM:](#)
- [For GSM:](#)
  1. [Observed time difference to the GSM cell](#)
  2. [GSM carrier RSSI](#)

[A description of those values can be found in \[7\] and \[8\].](#)

### 14.3.1 Inter-RAT reporting events

Within the measurement reporting criteria field in the MEASUREMENT CONTROL message the UTRAN notifies the UE which events should trigger the UE to send a MEASUREMENT REPORT message.

~~Examples of inter-RAT reporting events that would be useful for inter-RAT handover evaluation are given below. Note that normally the UEs do not need to report all these events.~~ The listed events are the toolbox from which the UTRAN can choose the reporting events that are needed for the implemented handover evaluation function, or other radio network functions.

All events are measured with respect to one of the measurement quantities given in subclause 14.3.0a, and of the frequency quality estimate given in subclause 14.3.0b. For UTRAN the measurement quantities are measured on the monitored primary common pilot channels (CPICH) in FDD mode and the monitored primary common control channels (PCCPCH) in TDD mode of the cell defined in the measurement object. ~~For other RAT the measurement quantities are system specific. The measurement objects are the monitored primary common pilot channels (CPICH) in FDD mode and the monitored primary common control channels (PCCPCH) in TDD mode for UTRAN and objects specific for other systems.~~ A "used UTRAN frequency" is a frequency that the UE have been ordered to measure upon and is also currently used for the connection to UTRAN. "Other system" is e.g. GSM.

In the text below describing the events:

- "The BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement" shall be understood as the BCCH ARFCN and BSIC combinations of the inter-RAT cells pointed at in the IE "Cell for measurements" if it has been received for that inter-RAT measurement, or otherwise of the cells included in the "inter-RAT cell info" part of the variable CELL\_INFO\_LIST.
- "The BCCH ARFCNs considered in that inter-RAT measurement" shall be understood as the BCCH ARFCNs of the inter-RAT cells pointed at in the IE "Cell for measurements" if it has been received for that inter-RAT measurement, or otherwise of the cells included in the "inter-RAT cell info" part of the variable CELL\_INFO\_LIST.

#### 14.3.1.1 Event 3a: The estimated quality of the currently used UTRAN frequency is below a certain threshold **and** the estimated quality of the other system is above a certain threshold.

When an inter-RAT measurement configuring event 3a is set up, the UE shall create a variable TRIGGERED\_3A\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 3a is configured in the UE within a measurement, the UE shall:

- If the other RAT is GSM, and if IE "BSIC verification required" is set to "required":
- If equations 1 and 2 below have both been fulfilled during the time "Time to trigger" from the same instant, respectively for the used UTRAN frequency and for one or several GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
  - If the Inter-RAT cell id of any of those GSM cells is not stored in the variable TRIGGERED\_3A\_EVENT:
  - Store the Inter-RAT cell ids of the GSM cells that triggered the event and that were not previously stored in the variable TRIGGERED\_3A\_EVENT into that variable.
  - Send a measurement report with IEs set as below:

- In “inter-RAT measurement event result”: “inter-RAT event identity” to “3a”, “CHOICE BSIC” to “verified BSIC” and “Inter-RAT cell id” to the GSM cells that triggered the event (best one first);
- “measured results” and possible “additional measured results” according to 8.4.2;
- If equation 4 is fulfilled for a GSM cell whose inter-RAT cell id is stored in the variable TRIGGERED\_3A\_EVENT:
  - Remove the inter-RAT cell id of that GSM cell from the variable TRIGGERED\_3A\_EVENT
- If equation 3 is fulfilled for the used frequency in UTRAN:
  - Clear the variable TRIGGERED\_3A\_EVENT
- If the other RAT is GSM, and if IE “BSIC verification required” is set to “not required”:
  - If equations 1 and 2 below have been fulfilled during the time “Time to trigger” from the same instant, respectively for the used UTRAN frequency and for one or several BCCH ARFCNs considered in that inter-RAT measurement:
    - If any of those BCCH ARFCNs is not stored into the variable TRIGGERED\_3A\_EVENT:
      - Store the BCCH ARFCNs that triggered the event and that were not previously stored in the variable TRIGGERED\_3A\_EVENT into that variable;
      - Send a measurement report with IEs set as below:
        - In “inter-RAT measurement event result”: “inter-RAT event identity” to “3a”, “CHOICE BSIC” to “non verified BSIC” and “BCCH ARFCN” to BCCH ARFCNs that triggered the event (best one first);
        - “measured results” and possible “additional measured results” according to 8.4.2;
  - If equation 4 is fulfilled for a BCCH ARFCN that is stored in the variable TRIGGERED\_3A\_EVENT:
    - Remove that BCCH ARFCN from the variable TRIGGERED\_3A\_EVENT;
  - If equation 3 is fulfilled for the used frequency in UTRAN:
    - Clear the variable TRIGGERED\_3A\_EVENT

Triggering conditions:

Equation 1:

$$Q_{Used} \leq T_{Used} - H_{3a} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used UTRAN frequency.

$T_{Used}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{3a}$  is the hysteresis parameter for event 3a.

Equation 2:

$$M_{Other\ RAT} \geq T_{Other\ RAT} + H_{3a}/2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3a}$  is the hysteresis parameter for event 3a.

Leaving triggered state conditions:

Equation 3:

$$Q_{Used} > T_{Used} + H_{3a}/2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used UTRAN frequency.

$T_{Used}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{3a}$  is the hysteresis parameter for event 3a.

Equation 4:

$$M_{Other\ RAT} < T_{Other\ RAT} - H_{3a}/2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3a}$  is the hysteresis parameter for event 3a.

When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of the currently used frequency is below the value of the IE "Threshold own system" and the hysteresis and time to trigger conditions are fulfilled and the estimated quality of the other system is above the value of the IE "Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system and the best primary CPICH (FDD) or primary CCPCH (TDD) on the used frequency.

14.3.1.2 Event 3b: The estimated quality of other system is below a certain threshold

When an inter-RAT measurement configuring event 3b is set up, the UE shall create a variable TRIGGERED\_3B\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 3b is configured in the UE within a measurement, the UE shall:

- If the other RAT is GSM, and if IE “BSIC verification required” is set to “required”:
  - If equation 1 below has been fulfilled during the time “time to trigger” for one or several GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
    - If the inter-RAT cell id of any of those GSM cell is not stored in the variable TRIGGERED\_3B\_EVENT:
      - Store the inter-RAT cell ids of the GSM cells that triggered the event and that were not previously stored in the variable TRIGGERED\_3B\_EVENT into that variable.
      - Send a measurement report with IEs set as below:
        - In “inter-RAT measurement event result”: “inter-RAT event identity” to “3b”, “CHOICE BSIC” to “verified BSIC” and “Inter-RAT cell id” to the GSM cells that triggered the event (worst one first);
        - “measured results” and possible “additional measured results” according to 8.4.2;
    - If equation 2 below is fulfilled for a GSM cell whose inter-RAT cell id is stored in the variable TRIGGERED\_3B\_EVENT:
      - Remove the inter-RAT cell id of that GSM cell from the variable TRIGGERED\_3B\_EVENT.
- If the other RAT is GSM, and if IE “BSIC verification required” is set to “not required”:
  - If equation 1 below has been fulfilled during the time “time to trigger” for one or several of the BCCH ARFCNs considered in that inter-RAT measurement:
    - If any of those BCCH ARFCN is not stored into the variable TRIGGERED\_3B\_EVENT:
      - Store the BCCH ARFCNs that triggered the event and that were not previously stored in the variable TRIGGERED\_3B\_EVENT into that variable;
      - Send a measurement report with IEs set as below:
        - In “inter-RAT measurement event result”: “inter-RAT event identity” to “3b”, “CHOICE BSIC” to “non verified BSIC” and “BCCH ARFCN” to BCCH ARFCNs that triggered the event (worst one first);
        - “measured results” and possible “additional measured results” according to 8.4.2;
    - If equation 2 below is fulfilled for a BCCH ARFCN that is stored in the variable TRIGGERED\_3B\_EVENT:
      - Remove that BCCH ARFCN from the variable TRIGGERED\_3B\_EVENT;

Triggering condition:

Equation 1:

$$M_{Other\ RAT} \leq T_{Other\ RAT} - H_{3b} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3b}$  is the hysteresis parameter for event 3b.

Leaving triggered state condition:

Equation 2:

$$M_{Other\ RAT} > T_{Other\ RAT} + H_{3b} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3b}$  is the hysteresis parameter for event 3b.

~~When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the estimated quality of the other system is below the value of the IE "Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system.~~

#### 14.3.1.3 Event 3c: The estimated quality of other system is above a certain threshold

When an inter-RAT measurement configuring event 3c is set up, the UE shall create a variable TRIGGERED\_3C\_EVENT related to that measurement, which shall initially be empty. This variable shall be deleted when the measurement is released.

When event 3c is configured in the UE within a measurement, the UE shall:

- If the other RAT is GSM, and if IE "BSIC verification required" is set to "required":
- If equation 1 below has been fulfilled during the time "time to trigger" for one or several GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
  - If the inter-RAT cell id of any of those GSM cell is not stored in the variable TRIGGERED\_3C\_EVENT:
    - Store the Inter-RAT cell ids of the GSM cells that triggered the event and that were not previously stored in the variable TRIGGERED\_3C\_EVENT into that variable;
    - Send a measurement report with IEs set as below:
      - In "inter-RAT measurement event result": "inter-RAT event identity" to "3c", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cells that triggered the event (best one first);
      - "measured results" and possible "additional measured results" according to 8.4.2;
  - If equation 2 below is fulfilled for a GSM cell whose inter-RAT cell id is stored in the variable TRIGGERED\_3C\_EVENT:



- Remove the inter-RAT cell id of that GSM cell from the variable TRIGGERED\_3C\_EVENT;
- If the other RAT is GSM, and if IE “BSIC verification required” is set to “not required”:
  - If equation 1 below has been fulfilled during the time “time to trigger” for one or several of the BCCH ARFCNs considered in that inter-RAT measurement:
    - If any of those BCCH ARFCN is not stored into the variable TRIGGERED\_3C\_EVENT:
      - Store the BCCH ARFCNs that triggered the event and that were not previously stored in the variable TRIGGERED\_3C\_EVENT into that variable;
      - Send a measurement report with IEs set as below:
        - In “inter-RAT measurement event result”: “inter-RAT event identity” to “3c”, “CHOICE BSIC” to “non verified BSIC” and “BCCH ARFCN” to BCCH ARFCNs that triggered the event (best one first);
        - “measured results” and possible “additional measured results” according to 8.4.2;
  - If equation 2 is fulfilled for a BCCH ARFCN that is stored in the variable TRIGGERED\_3C\_EVENT:
    - Remove that BCCH ARFCN from the variable TRIGGERED\_3C\_EVENT;

Triggering condition:

Equation 1:

$$M_{Other\ RAT} \geq T_{Other\ RAT} + H_{3c} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3c}$  is the hysteresis parameter for event 3c.

Leaving triggered state condition:

Equation 2:

$$M_{Other\ RAT} < T_{Other\ RAT} - H_{3c} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3c}$  is the hysteresis parameter for event 3c.

When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the estimated quality of the other system is above the value of the IE "Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system.

#### 14.3.1.4 Event 3d: Change of best cell in other system

When an inter-RAT measurement configuring event 3d is set up, the UE shall create a variable BEST\_CELL\_3D\_EVENT related to that measurement. This variable shall be deleted when the measurement is released.

When event 3d is configured in the UE within a measurement, the UE shall:

- If the other RAT is GSM, and if IE "BSIC verification required" is set to "required":
  - When the measurement is initiated or resumed:
    - store in the variable BEST\_CELL\_3D\_EVENT the Inter-RAT cell id of the GSM cell that has the best measured quantity among the GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement
    - send a measurement report with IE set as below:
      - in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cell that is stored in the variable BEST\_CELL\_3D\_EVENT
      - "measured results" and possible "additional measured results" according to 8.4.2;
  - If equation 1 has been fulfilled during the time "time to trigger" for a GSM cell that is different from the one stored in BEST\_CELL\_3D\_EVENT and that matches any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
    - store the Inter-RAT cell id of that GSM cell in the variable BEST\_CELL\_3D\_EVENT;
    - send a measurement report with IEs set as below:
      - in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cell is now stored in BEST\_CELL\_3D\_EVENT;
      - "measured results" and possible "additional measured results" according to 8.4.2;
- If the other RAT is GSM, and if IE "BSIC verification required" is set to "not required":
  - When the measurement is initiated or resumed:
    - store in the variable BEST\_CELL\_3D\_EVENT the BCCH ARFCN of the GSM cell that has the best measured quantity among the BCCH ARFCNs considered in that inter-RAT measurement
    - send a measurement report with IE set as below:
      - in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "non verified BSIC" and "BCCH ARFCN" to the BCH ARFCN that is stored in the variable BEST\_CELL\_3D\_EVENT;
      - "measured results" and possible "additional measured results" according to 8.4.2;

- If equation 1 below has been fulfilled during the time “time to trigger” for one of the BCCH ARFCNs considered in that inter-RAT measurement and different from the one stored in BEST\_CELL\_3D\_EVENT:
  - store the BCCH ARFCN of that GSM cell in the variable BEST\_CELL\_3D\_EVENT;
  - send a measurement report with IEs set as below:
    - in “inter-RAT measurement event result”: “inter-RAT event identity” to “3d”, “CHOICE BSIC” to “non verified BSIC” and “BCCH ARFCN” to the BCCH ARFCN that is now stored in the variable BEST\_CELL\_3D\_EVENT;
    - “measured results” and possible “additional measured results” according to 8.4.2;

Equation 1:

$$M_{New} \geq M_{Best} + H_{3d} / 2$$

The variables in the formula are defined as follows:

$M_{New}$  is the measurement quantity for a GSM cell that is not stored in the variable BEST\_CELL\_3D.

$M_{Best}$  is the measurement quantity for a GSM cell that is stored in the variable BEST\_CELL\_3D.

$H_{3d}$  is the hysteresis parameter for event 3d.

If any of the quality estimates for the cells in the other system becomes better than the quality estimate for the currently best cell in the other system, and event 3d has been ordered by UTRAN then this event shall trigger a report to be sent from the UE when the hysteresis and time to trigger conditions is fulfilled. The corresponding report contains (at least) information the best cell in the other system.