**3GPP TSG-RAN WG2, Sophia Antipolis, France, 16-19 August 1999** **TSGR2#6(99) 844**

**Agenda Item:**

**Source: Rapporteur**

**Title: 25.331, RRC Protocol Specification, V1.2.1**

**Document for: Approval**

Attached is the RRC protocol specification which includes changes agreed at the last RAN WG2 meeting (July 5-9, 1999). There have additionally been some minor edits with respect to Tdoc 714 (V1.2.0) which was sent on the reflector earlier, these changes are based on suggestions made by Sony and are listed below.

**A number of minor edits have also been made for clarification and consistency, of particular note:**

1) The title of section 15.1.4 has been changed

from: Intra-frequency reporting mechanisms
to: Mechanisms available for modifying intra-frequency measurement reporting behaviour

2) The list of RRC functions (Section 7) has been updated to be consistent with those described in 25.301

3) The text in section 4 has been edited to bring it into line with the corresponding diagrams (ie. BCFE and PNFE can use both Tr-SAP and UM-SAP).

**Additional edits made on the suggestion of Sony with respect to Tdoc 714 (V1.2.0) :**

1) Sect. 3.2: CM stands for "Connection Management", not "Call Management".
***[Editor comment: Agreed - change incorporated]***
2) Sect. 7: Could we include the "integrity protection" function already (or do we wait until the formal approval of the corresponding CR on 25.301 at the next RAN meeting)?
***[Editor comment: Agreed - change incorporated]***
3) Sect. 8.2.1: I guess that instead of "CM Establishment Request" it should read "CM Service Request" and instead of "Location Update Request" it should read "Location Updating Request" as these are the correct GSM message names.
***[Editor comment: Agreed - change incorporated]***
4) Sect. 8.2.2: is not aligned with 25.303 yet (as pointed out by Mikko already in the past). A step into the direction of alignment would be e.g. to show in the MSC figure that at least one RRC CONNECTION RELEASE COMPLETE is present and QR is used for the case (a) by having several dashed arrows for more RRC CONNECTION RELEASE COMPLETE messages and notes that these refer to the case (a). Also, the RRC CONNECTION RELEASE is sent in UM in case (a).
***[Editor comment: The RRC CONNECTION RELEASE message is now marked as being sent unacknowledged. Since it was agreed to remove the quick repeat function at the last meeting, my proposal is to show just a single solid arrow indicating the presence of the RRC CONNECTION RELEASE COMPLETE message. A sentence has been added to the text indicating the presence of the COMPLETE message]***
5) Sect. 8.3.1.3: The message names need to aligned with 25.303, but I guess this is more for Mikko to change 25.303 rather than to change 25.331.
***[Editor comment: We could discuss this in the meeting, the message name given in 25.303 does appear very long, but otherwise I don't have a preference]***
6) Sect. 8.3.3: That the TRANSPORT FORMAT COMBINATION CONTROL message may be sent in UM is in 25.303 not marked as FFS. It is there a NW option to use UM or AM. Should the FFS in 25.331 be deleted then?
***[Editor comment: 25.331 has now been modified and brought into line with 25.303]***

# TS 25.331 V1.21.10 (1999-0876)

*Technical Specification*

## 3rd Generation Partnership Project (3GPP); Technical Specification Group (TSG) RAN; Working Group 2 (WG2);

# RRC Protocol Specification

Reference
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# Contents

# Intellectual Property Rights

[Editor's note: This paragraph has been modified from corresponding ETSI text in anticipation of a new version regarding 3GPP.]

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# Foreword

This Technical Specification has been produced by the 3GPP.
The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification.

# 1. Scope

The scope of this specification is to describe the Radio Resource Control protocol for the 3GPP radio system.

# 2. References

[1] UMTS 25.XX, 'Vocabulary for the UTRAN'

[2] 25.301, 'Radio Interface Protocol Architecture'

[3] 25.303, 'Description of UE states and procedures in connected mode'

# 3. Definitions, Symbols and abbreviations

## 3.1 Definitions

See [1] for definition of fundamental concepts and vocabulary

## 3.2 Abbreviations

| | |
|---|---|
| ACK | Acknowledgement |
| AICH | Acquisition Indicator CHannel |
| AM | Acknowledged Mode |
| AS | Access Stratum |
| ASN.1 | Abstract Syntax Notation.1 |
| BCCH | Broadcast Control Channel |
| BCFE | Broadcast Control Functional Entity |
| BER | Bite Error Rate |
| BLER | BLock Error Rate |
| BSS | Base Station Sub-system |
| C | Conditional |
| CCPCH | Common Control Physical CHannel |
| CCCH | Common Control Channel |
| CN | Core Network |
| CM | Connection Management |
| CPCH | Common Packet CHannel |
| C-RNTI | CRNC RNTI |
| DCA | Dynamic Channel Allocation |
| DCCH | Dedicated Control Channel |
| DCFE | Dedicated Control Functional Entity |
| DCH | Dedicated Channel |
| DC-SAP | Dedicated Control SAP |
| DL | Downlink |
| DRAC | Dynamic Resource Allocation Control |
| DTCH | Dedicated Traffic Channel |
| FACH | Forward Access Channel |
| FAUSCH | Fast Uplink Signalling Channel |
| FDD | Frequency Division Duplex |
| FFS | For Further Study |
| GC-SAP | General Control SAP |

| | |
|---|---|
| ID | Identifier |
| IMEI | International Mobile Equipment Identity |
| IMSI | International Mobile Subscriber Identity |
| IP | Internet Protocol |
| ISCP | Interference on Signal Code Power |
| LAI | Location Area Identity |
| L1 | Layer 1 |
| L2 | Layer 2 |
| L3 | Layer 3 |
| M | Mandatory |
| MAC | Media Access Control |
| MCC | Mobile Country Code |
| MM | Mobility Management |
| MNC | Mobile Network Code |
| MS | Mobile Station |
| NAS | Non Access Stratum |
| Nt-SAP | Notification SAP |
| NW | Network |
| O | Optional |
| ODMA | Opportunity Driven Multiple Access |
| PCCH | Paging Control Channel |
| PCH | Paging Channel |
| PDU | Protocol Data Unit |
| PLMN | Public Land Mobile Network |
| PNFE | Paging and Notification Control Functional Entity |
| PRACH | Physical Random Access CHannel |
| P-TMSI | Packet Temporary Mobile Subscriber Identity |
| QoS | Quality of Service |
| RAB | Radio access bearer |
| RAI | Routing Area Identity |
| RACH | Random Access CHannel |
| RFE | Routing Functional Entity |
| RL | Radio Link |
| RLC | Radio Link Control |
| RNTI | Radio Network Temporary Identifier |
| RNC | Radio Network Controller |
| RRC | Radio Resource Control |
| RSCP | Received Signal Code Power |
| RSSI | Received Signal Strength Indicator |
| SAP | Service Access Point |
| SF | Spreading Factor |
| SIR | Signal to Interference Ratio |
| SSDT | Site Selection Diversity Transmission |
| S-RNTI | SRNC - RNTI |
| tbd | to be decided |
| TDD | Time Division Duplex |
| TF | Transport Format |
| TFCS | Transport Format Combination Set |
| TFS | Transport Format Set |
| TME | Transfer Mode Enitity |
| TMSI | Temporary Mobile Subscriber Identity |
| Tr | Transparent |
| Tx | Transmission |
| UE | User Equipment |
| UL | Uplink |
| UM | Unacknowledged Mode |
| UMTS | Universal Mobile Telecommunications System |
| UNACK | Unacknowledgement |
| URA | UTRAN Registration Area |
| UTRAN | UMTS Terrestrial Radio Access Network |

# 4. General

The functional entities of the RRC layer are described below:

- Routing of higher layer messages to different MM/CM entities (UE side) or different core network domains (UTRAN side) is handled by the Routing Function Entity (**RFE**)

- Broadcast functions are handled in the broadcast control function entity (**BCFE**). The BCFE is used to deliver the ~~offers~~ RRC services which are required at~~by~~ the GC-SAP. The BCFE can use ~~and uses~~ the lower layer services provided by the Tr-SAP and UM-SAP.

- Paging of idle mode UE(s) is controlled by the paging and notification control function entity (**PNFE**). The PNFE is used to deliver the~~offers~~ RRC services which are required at~~by~~ the Nt-SAP. The PNFE can use ~~and uses~~ the lower layer services provided by the Tr-SAP and UM-SAP.

- The Dedicated Control Function Entity (**DCFE**) handles all functions specific to one UE. The DCFE is used to deliver the RRC services which are required at the~~offers RRC services by the~~ DC-SAP and can use lower layer services of UM/AM-SAP and Tr-SAP depending on the message to be sent and on the current UE service state.

- The Transfer Mode Entity (TME) handles the mapping between the different entities inside the RRC layer and the SAP's provided by RLC.

*Logical information exchange is necessary also between the RRC sublayer functional entities. Most of that is implementation dependent and not necessary to present in detail in a specification.*

Figure 1 shows the RRC model for the UE side and Figure 2 shows the RRC model for the UTRAN side.

*[Editors note: Some further clarification in the diagrams may be beneficial to acknowledge the fact that a DC-SAP for example might be offered over a dedicated channel (with RRC terminated in SRNC) whereas GC-SAP and Nt-SAP may be offered over BCCH, PCH respectively in which cases RRC is located in Node B. It could be concluded from the figure that these channels use the same SAP offered by RLC (Tr-SAP, UM-SAP, AM-SAP) whereas in fact they will use different SAP's, though the SAP **type** might be the same]*

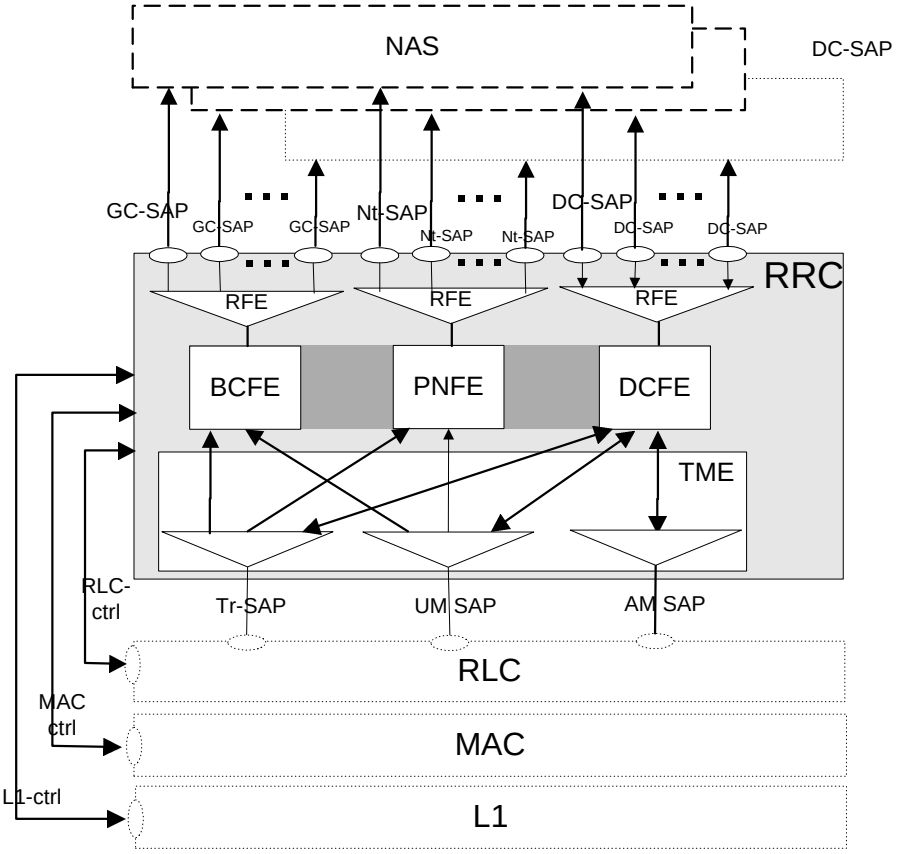



**Figure 1) UE side model of RRC**

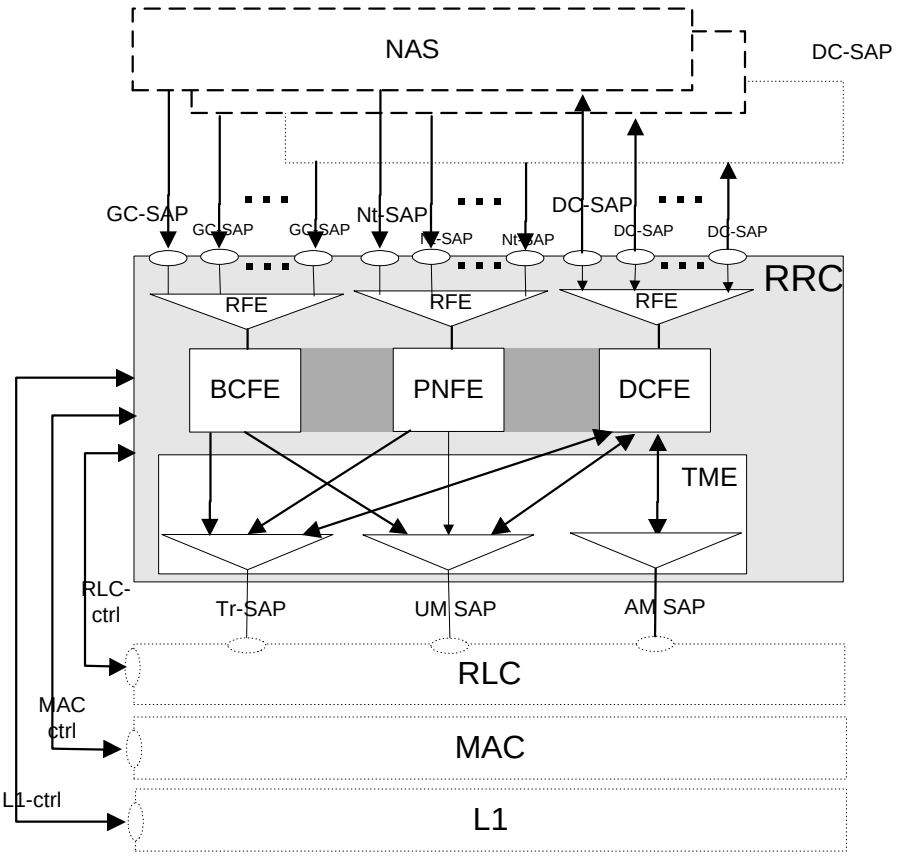



**Figure 2) UTRAN side RRC model**

# 5 RRC Services provided to upper layers

The RRC offers the following services to upper layers, a description of these services is provided in [2].

- **General Control**
- **Notification**
- **Dedicated control**

# 6 Services expected from lower layers

## 6.1 Services expected from Layer 2

## 6.2 Services expected from Layer 1

# 7 Functions of RRC

The RRC performs the functions listed below, a more detailed description of these functions is provided in 25.301~~YY.01~~:

- **Broadcast of information provided by the non-access stratum (Core Network).**
- **Broadcast of information related to the access stratum.**
- **Establishment, maintenance and release of an RRC connection between the UE and UTRAN~~.~~**
- **Establishment, reconfiguration and release of Radio Access Bearers**
- **Assignment, reconfiguration and release of radio resources for the RRC connection.**
- **RRC connection mobility functions.**

~~- Arbitration of the radio resource allocation between the cells.~~

- **Routing of higher layer PDU's**
- **Control of requested QoS**.
- **UE measurement reporting and control of the reporting.**
- **Outer loop power control.**
- **Control of ciphering.**
- **Slow DCA**.
- **Broadcast of ODMA relay node neighbour information**
- **Collation of ODMA relay nodes neighbour lists and gradient information**
- **Maintenance of number of ODMA relay node neighbours**
- **Establishment, maintenance and release of a route between ODMA relay nodes**
- **Interworking between the Gateway ODMA relay node and the UTRAN**
- **Contention resolution (TDD mode)**
- **Paging/notification.**

- **Initial cell selection and re-selection in idle mode.**
- **Arbitration of radio resoirces on uplink DCH**
- **RRC message integrity protection**

The following functions are regarded as further study items:

- ~~**Initial cell selection and re-selection in idle mode.**~~
- **Congestion control.**
- **Arbitration of the radio resource allocation between the cells.**

~~- **Routing of higher layer PDU's (in UE side to correct higher layer entity and in UTRAN side to correct RANAP entity). The requirement for this function will be dependent on the decision made by SMG12.**~~

# 8 Elementary RRC procedures

This section describes elementary RRC procedures used in the idle mode and in the connected mode. More description on the different UE modes is provided in [2].This section also describes procedures for establishing and releasing an RRC connection.

## 8.1 Idle mode procedures

### 8.1.1 Broadcast of system information

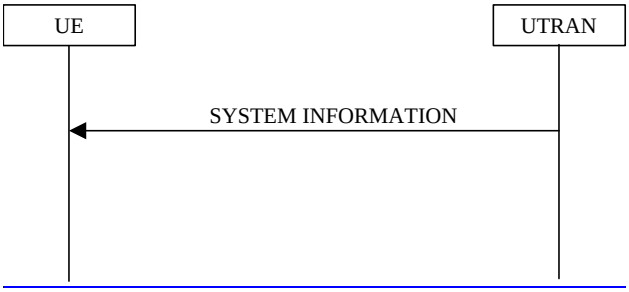



**Figure 3) Procedure for broadcast of system information**

This procedure is used for broadcasting system information from the network to all UEs in a cell. Only UEs that listen to the logical channel BCCH can be reached by this procedure. The system information is repeated on a regular basis and it includes information from both the access stratum and the non-access stratum. The initiative to change the system information can come from both the access stratum and non-access stratum.

The system information elements are broadcast in *system information blocks*. A system information block groups together system information elements of the same nature. Different system information blocks may have different characteristics, e.g. regarding their repetition rate and the requirements on UEs to re-read~~update~~ the system information blocks.

The system information is organised as a tree. A *master information block* gives references to a number of system information blocks in a cell, including scheduling information for those system information blocks. The master information block is scheduled with ~~at~~ a fixed pre-defined repetition rate.

The system information blocks contain the actual system information and/or references to other system information blocks including scheduling information for those system information blocks.

*Note: A system information block may be segmented and carried in several transport blocks, but this mechanism is FFS.*

~~Figure 1~~Figure 4 illustrates the relationship between the master information block and the system information blocks in a cell.

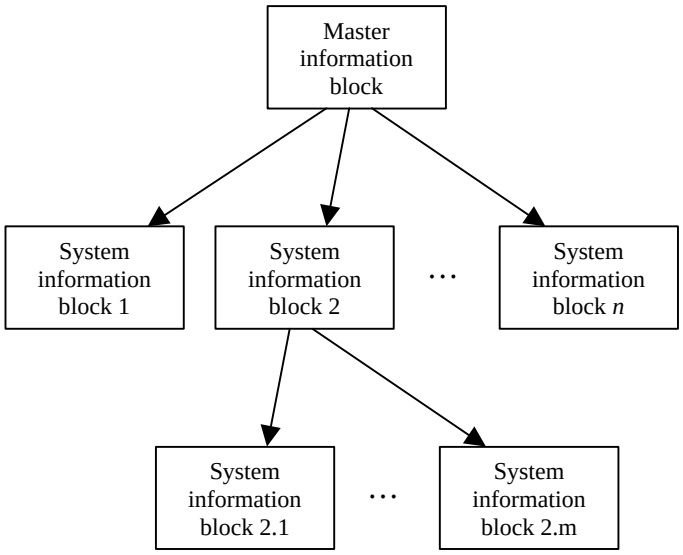



**Figure 4 ~~Figure 1.~~ The overall structure of system information.**

~~The SYSTEM INFORMATION message is regularly broadcast on the BCH by the UTRAN. Based on this information the mobile station is able to decide whether and how it may gain access to the system via the current cell.~~

~~The contents of the SYSTEM INFORMATION messages can come from RRC and from the physical layer measurements of each cell *[Editors note: Other sources for the system information are also allowed].*~~

The information may be grouped into the following classes:

- information giving unique identification of the current network, location area, UTRAN registration area and cell
- information used for candidate cell measurements for handover and cell selection procedures
- information describing the current control channel structure
- information for controlling the random access channel utili~~s~~zation
- information defining different options supported within the cell
- protocol information

*[Note: The actual grouping will be defined when the complete set of system information blocks have been specified.~~messages that forms the system information is FFS.~~ However, basically the same elementary procedure can be applied for all messages.]*

When a system information block~~s~~ on the BCCH is~~are~~ modified, the message PAGING TYPE 1 can be~~is~~ sent ~~to all UEs~~ on the PCCH to inform UE's about the changes. The message includes the information element *BCCH Modification Information.*

*[Note that other options will also be available to force the UE to re-read SYSTEM INFORMATION, for example timers in the UE could be used to trigger the UE into re-reading frequently changing SYSTEM INFORMATION].*

### 8.1.2 Paging

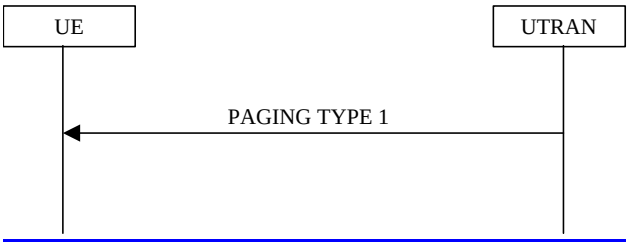



**Figure 5) Paging procedure**

This procedure is used to broadcast a PAGING TYPE 1 message from the network to selected UEs which are in idle mode. Only UEs which listen to the correct paging group can be reached by this procedure. The PAGING TYPE 1 message can be sent to either one or many UEs at the same time.

~~*[Note, the following is FFS]:* The PAGING TYPE 1 message includes BCCH Modification Information, which indicates the modification of the System Information on BCCH. The coding of BCCH Modification Information is FFS.~~

*[Note: The addresses which are to be used in the paging message (eg IMUI etc) are still to be defined]*

*[Note: The number of addresses to be used in the paging message needs to be defined]*

*[Note: the requirement to have different paging messages for UTRAN originated and CN originated RRC connected mode paging needs to be confirmed]*

### 8.1.3 Notification


**Figure 6) Notification procedure**

This procedure is used for broadcast of notification information to selected UEs in a cell. Only UEs that listen to the correct notification group can be reached by this procedure. The initiative to send a NOTIFICATION can come from both the access stratum and the non-access stratum. NOTIFICATION can be sent to either one or many UEs at the same time.

*[Note: Notification may be cell specific]*

*[Note: The usage of this procedure is FFS.]*

## 8.2 RRC connection establishment and release procedures

### 8.2.1 RRC Connection Establishment

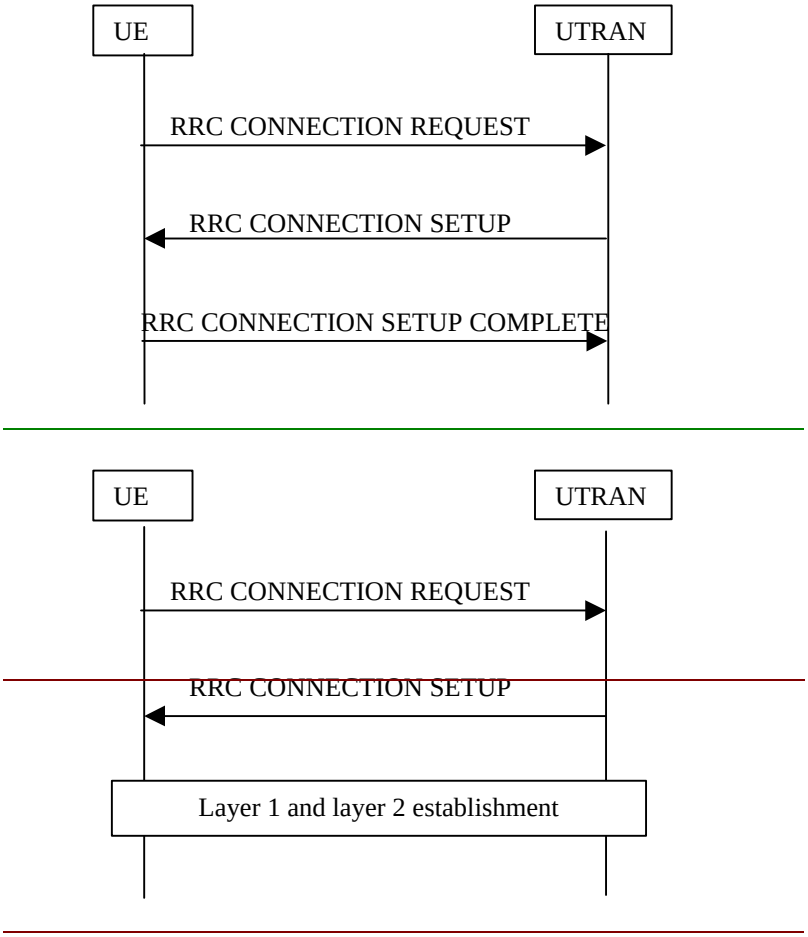



**Figure 7) Procedure for RRC connection establishment**

This procedure is initiated from the UE side to establish an RRC connection, as a result of either:

(1) A request from the non-access stratum to establish the first signalling connection for the UE *[Note: For a GSM-based Core Network some examples of reasons are: CM Service~~Establishment~~ Request and Location Updating~~e~~ Request.]*, or

(2) A received paging request. [*Note: Whether the RRC connection is established with or without an explicit request from UE non-access stratum in this case is FFS.]*

The RRC connection establishment is initiated by the UE, which leaves the idle mode and sends an RRC CONNECTION REQUEST message using unassured mode on the uplink CCCH. ~~*[Note: The initial identification of the UE is FFS.]*~~

As an initial identification in the RRC CONNECTION REQUEST message the UE uses a unique Non access stratum identity. This NAS identity could be either TMSI + LAI, P-TMSI + RAI, IMSI or IMEI. *[Note: This is pending confirmation from WG1 that the RACH can support the required payload when this type of ID is used]*

The UTRAN makes an assignment of radio resources and the Radio Network Temporary Identity (RNTI) to be used by the UE. The UTRAN then sends an RRC CONNECTION SETUP message to the UE using unassured mode on the downlink CCCH. The message includes radio resource parameters and the RNTI.

The UE then configures the layer 2 and layer 1 processing required to support~~for~~ the DCCH according to ~~using~~ the radio resource parameters.

The procedure successfully ends when the ~~layer 2 signalling link is established on the DCCH.~~ network receives an RRC CONNECTION SETUP COMPLETE message. This~~e~~ message~~,~~ which is sent using acknowledged data transfer on the DCCH~~,~~ confirms that the UE has completed the procedure~~ assigned parameters.~~

~~*[Note: The necessity of an explicit RRC CONNECTION SETUP COMPLETE MESSAGE from the UE to the UTRAN on layer 3 is FFS. One assumption is, that there is an explicit layer 2 peer-to-peer signalling to establish the signalling link, making an explicit RRC CONNECTION SETUP COMPLETE message on layer 3 unnecessary.]*~~

Note also that on receipt of an RRC CONNECTION REQUEST message~~,~~ the RNC can allocate a FAUSCH channel for the UE for the particular cell o~~,~~ ~~i~~n which the UE is camping. Alternatively the RNC can allocate ~~on, or~~ FAUSCH channels for each of a number of cells within~~of~~ the URA~~,~~ in which the UE is currently staying, though this will depend~~ing~~ on the type of UE. The FAUSCH channels allocated are conveyed to the UE in the RRC CONNECTION SETUP message.

The following procedure which could be used during RRC connection establishment is for further study:

On receipt of an RRC CONNECTION REQUEST message, the RNC may allocate a dedicated channel to the mobile station. It is also possible to setup macrodiversity at this point. To do so means that the RRC CONNECTION REQUEST message must contain a measurement report. In this case, the RNC executes branch addition (physical channel activation) to each cell (/NodeB) that will be included in the active set. After the physical channel(s) are setup on the UTRAN side, the RRC CONNECTION SETUP message is sent to the UE on the FACH channel. When the UE has activated the physical channels in the active set, it returns an RRC CONNECTION SETUP COMPLETE message.

## 8.2.2 RRC Connection Release

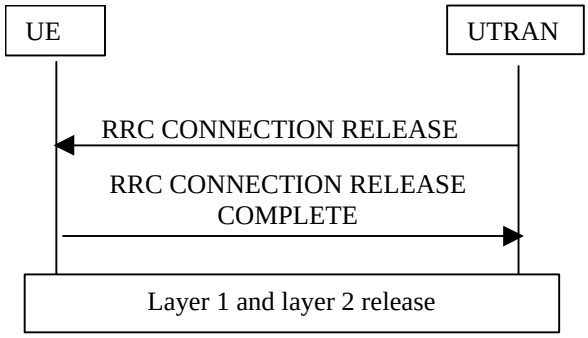



**Figure 8) RRC Connection release procedure**

A normal RRC connection release procedure is initiated from the UTRAN, e.g. when the last Signaling Connection is released. *[Note: Release in case of RRC connection failure is FFS.] [Note: Possibility for UE initiated RRC connection release is FFS.]*

Two variants of this procedure have been identified:

a) RRC connection release from state where dedicated physical channel is available

b) RRC connection release from state where there is no dedicated physical channel

In the former case (a) the UTRAN sends an RRC CONNECTION RELEASE message to the UE using unacknowledged mode on the DCCH. The UE then responds by sending an RRC CONNECTION RELEASE COMPLETE message to the UTRAN. The UE then leaves the Connected Mode and initiates release of the layer 2 signalling link. The RRC Connection Release procedure ends when all UE dedicated resources (such as radio resources and radio access bearers) tied to the RRC connection are released and the RRC layer is transferred to idle mode.

In the latter case (b) the RRC layer entity in the network issues an RRC CONNECTION RELEASE message using unacknowledged mode on the DCCH. Upon reception of this message the UE-RRC sends an RRC CONNECTION RELEASE COMPLETE message to UTRAN using acknowledged mode on the DCCH. *[Note: Depending on RLC design, the acknowledgement to RRC CONNECTION RELEASE could be piggybacked to the RRC CONNECTION RELEASE COMPLETE MESSAGE, resulting in no additional messages. Therefore acked / unacked transmission is considered FFS.]*. After receiving the RRC CONNECTION RELEASE COMPLETE message the network RRC layer releases L2 resources and the RRC entity dedicated to this UE goes to Idle Mode. On receipt of the RRC CONNECTION RELEASE COMPLETE message the network also releases any ~~the~~ FAUSCH channels which were allocated to~~for~~ the UE ~~going to idle mode if FAUSCH channels have been allocated~~ during RRC connection establishment.

### 8.2.3 RRC Connection re-establishment

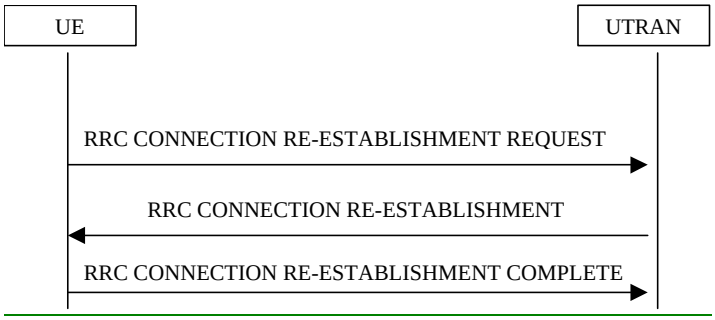



**Figure 9) RRC Connection re-establishment**

RRC connection re-establishment is needed, when a UE loses the radio connection due to e.g. radio link failure. After ~~having selected~~ a new cell has been selected ~~,~~ the UE RRC sends the NW RRC an RRC CONNECTION RE-ESTABLISHMENT REQUEST message. The NW RRC configures the NW and acknowledges the connection re-establishment to the UE RRC with an RRC CONNECTION RE-ESTABLISHMENT message. This message may contain the FAUSCH channel(s) valid for this cell, and possibly other cells of the same URA, if FAUSCH channels have been allocated earlier. The UE RRC configures the UE L1 to activate the new radio link(s). After the UE has synchronised to at least one radio link, the MAC and RLC layers can be configured (if necessary).
After the UE has completed its configuration, it transmits an RRC CONNECTION RE-ESTABLISHMENT COMPLETE message to the network on the DCCH.

~~*[Note: The necessity of an explicit RRC CONNECTION REESTABLISHMENT COMPLETE message to be sent from the UE to the UTRAN on layer 3 is FFS. One assumption is, that there is an explicit layer 2 peer to peer signalling to establish the signalling link, making an explicit RRC CONNECTION REESTABLISHMENT COMPLETE message on layer 3 unnecessary].*~~

## 8.3 RRC connected mode procedures

### 8.3.1 Radio Access Bearer Related Procedures

#### 8.3.1.1 Radio Access Bearer Establishment

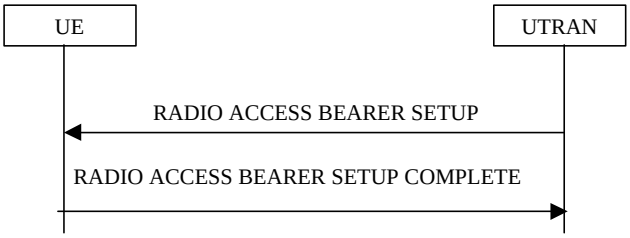



**Figure 10) Radio Access Bearer Establishment Procedure**

This procedure establishes a new radio access bearer. The establishment uses the~~includes, based on~~ QoS requirements in order to~~,~~ assign~~ment of~~the appropriate RLC parameters, multiplexing priority for the DTCH, scheduling priority for DCH, TFS for DCH and update of TFCS. It may also include assignment of a physical channel(s) and change of the used transport channel types / RRC state.

There are a number of alternative methods by which radio access bearers may be established:

a) Radio Access Bearer Establishment with dDedicated pPhysical cChannel aActivation
b) Radio Access Bearer Establishment with uUnsynchronised dDedicated pPhysical cChannel mModification
c) Radio Access Bearer Establishment with sSynchronised dDedicated pPhysical cChannel mModification
d) Radio Access Bearer Establishment without dDedicated pPhysical cChannel

A Radio Access Bearer Establishment is initiated when the RRC layer in the network sends a RADIO ACCESS BEARER SETUP message to its peer entity. This message contains L1, MAC and RLC parameters and in the synchronised case an activation time. RRC on the UE side then configures L1 and MAC and creates a new RLC entity associated with the new radio access bearer. A similar reconfiguration is also done on the network side. The UE then sends a RADIO ACCESS BEARER SETUP COMPLETE message back to the network.

*[Note: The possibility of establishing multiple radio access bearers within one message is FFS]*

### 8.3.1.2 Radio Access Bearer Release

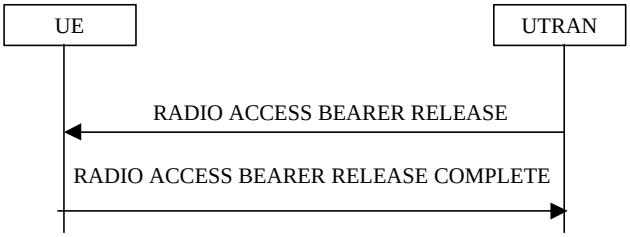



**Figure 11) Radio Access Bearer Release Procedure**

This procedure releases a radio access bearer. The RLC entity for the radio access bearer is released. The procedure may also release a DCH, which affects the TFCS. It may include release of physical channel(s) and change of the used transport channel types / RRC state.

The Radio Access Bearer Release procedure is initiated by the RRC layer on the NW side. A RADIO ACCESS BEARER RELEASE message is sent from the RRC layer in the network to its peer entity in the UE. This message includes possible new L1, MAC and RLC parameters for remaining radio access bearers and indentification of the radio access bearer to be released. *[Note: In synchronised case a specific activation time would be needed for the change of L1 and L2 configuration to avoid data loss.]*

The RRC on the UE side configures L1 and MAC, and releases the RLC entity associated to the released radio access bearer . A similar reconfiguration is also done on the network side.

Finally, RRC on the UE side sends a RADIO ACCESS BEARER RELEASE COMPLETE message to the network.

Currently the following alternative methods have been identified by which Radio Access Bearers may be released:

a) Radio Access Bearer Release with unsynchronised dedicated physical channel modification
b) Radio Access Bearer Release with synchronised dedicated physical channel modification
c) Radio Access Bearer Release without dedicated physical channel modification

*[Note: When a radio access bearer carried on a DCH is released, it is FFS, whether the UE should acknowledge the RADIO ACCESS BEARER RELEASE message before making the reconfiguration (on the DCH) or after making the reconfiguration (on the RACH)]*

*[Note: The possibility of releasing multiple radio access bearers within one message is FFS]*

### 8.3.1.3 Radio Access Bearer and signalling link Reconfiguration

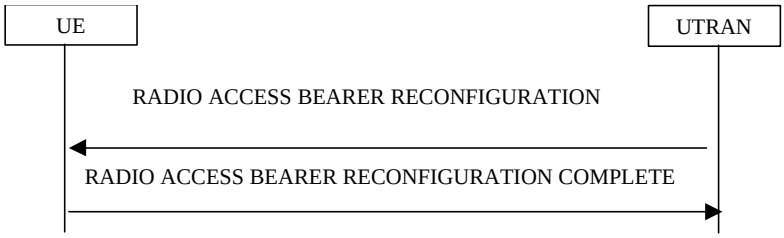



**Figure 12) Radio Access Bearer and signalling link Reconfiguration Procedure**

This procedure reconfigures parameters for a radio access bearer or the signalling link to reflect a change in QoS. It may include change of RLC parameters, change of multiplexing priority for DTCH/DCCH, change of DCH scheduling priority, change of TFS for DCH, change of TFCS, assignment or release of physical channel(s) and change of used transport channel types.

Currently identified options by which Radio Access Bearers may be reconfigured:

a) Synchronised Radio Access Bearer reconfiguration
b) Unsynchronised Radio Access Bearer reconfiguration

*[Note: When the reconfiguration involves a change of transport channel (eg. from DCH/DCH to RACH/FACH), it is FFS, whether the UE should acknowledge the RADIO ACCESS BEARER RECONFIGURATION message before making the reconfiguration (eg. on the DCH) or after making the reconfiguration (eg. on the RACH)]*

*[Note: The possibility of reconfiguring multiple radio access bearers and signalling links within one message is FFS]*

## 8.3.2 Transport Channel Reconfiguration

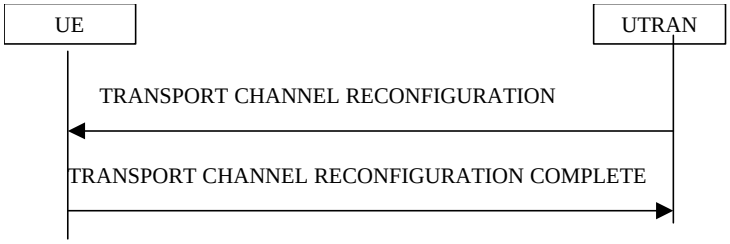



**Figure 13) Procedure for transport channel reconfiguration**

This procedure configures parameters related to a transport channel such as the TFS. The procedure also assigns a TFCS and may change physical channel parameters to reflect a reconfiguration of a transport channel in use.

A change of the transport format set for a transport channel is triggered in the RRC layer in the network. A TRANSPORT CHANNEL RECONFIGURATION message is then sent from the RRC layer in the network to its peer entity. This message contains the new transport format set, a new transport format combination sSet and may include physical channel parameters~~, i.e. new parameters for L1 and MAC~~. *[Note1: In a synchronised procedure a specific activation time is needed for the change of L1 and L2 configuration to avoid data loss.]* When this message is received in the UE a reconfiguration of L1 and MAC is done. A similar reconfiguration is also done on the network side. Finally, a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message is returned to the network.

Currently identified options by which transport channels may be reconfigured:

a) Synchronised transport format set reconfiguration
b) Unsynchronised transport format set reconfiguration
c) Pre-configuration of TFS/TFCS for a transport channel not yet in use

*[Note: When the reconfiguration involves a change of transport channel it is for further study~~FFS,~~ on what channel the UE should acknowledge the TRANSPORT CHANNEL RECONFIGURATION message, ie. whether it should*

*acknowledge before making the reconfiguration (eg. on the DCH) or after making the reconfiguration (eg. on the RACH)]*

*[Note: The possibility of reconfiguring multiple transport channels within one message is FFS]*

## 8.3.3 Transport Format Combination Control


**Figure 14) Transport Format Combination Control Procedure**

The network uses this procedure to control which transport format combinations (within the transport format combination set) can be used by the UE in the uplink. An example of when this procedure might be used is when a congestion situation occurs such that it is desirable to temporarily restrict the TFC's in use.

This procedure is initiated with a TRANSPORT FORMAT COMBINATION CONTROL message sent from the network to the UE. This message defines the subset of the complete ~~T~~transport ~~F~~format ~~C~~combination ~~S~~et which the UE is allowed to use, or in case of removing~~lieving~~ a temporary restriction, a TFCS which is identical to the complete original set. The UE then reconfigures MAC which thereafter uses the new TFC set. The TRANSPORT FORMAT COMBINATION CONTROL message may be sent optionally using acknowledged or~~as~~ unacknowledged data transfer ~~(FFS) since it is assumed that it does not matter if one UE out of many misses this information and stays with the old TFCS~~.

## 8.3.454 Physical Channel Reconfiguration

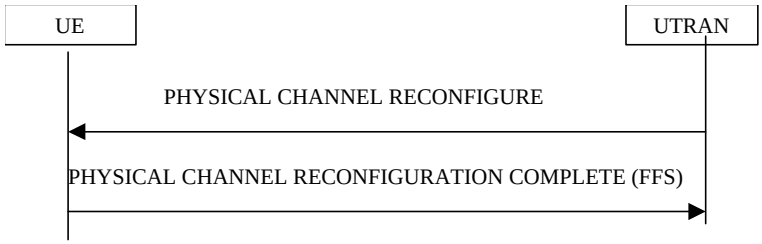



**Figure 15) Physical Channel Reconfiguration procedure**

This procedure may assign, replace or release a set of physical channels used by a~~n~~ UE. As a result of this, it may also change the used transport channel type (and RRC state). For example, when the first physical channel is assigned the UE enters the DCH/DCH state. When the last physical channel is released the UE leaves the DCH/DCH state and enters a state (and transport channel type) indicated by the network. A special case of using this procedure is to change the DL channelization code of a dedicated physical channel. *[Note: The procedure does not change the active set, in the downlink the same number of physical channels are added or replaced for each radio link.]*

Currently identified motivations for using this procedure (methods by which physical channels may be reconfigured):

a) Assignment of dedicated physical channel (switch from common channels to dedicated physical channel)
b) Synchronised replacement (modification) of dedicated physical channel (eg. for D/L code tree re-organisation)
c) Release dedicated physical channel (switch from dedicated physical channel to common channels).
d) This procedure can also be used to add further FAUSCH channels (e.g. for use in other cells of the URA, to which a UE might move in the future when the UE already has an RRC connection.)

## 8.3.565 Mobility Related Procedures

### 8.3.565.1 Modification of the active set when in Soft hand-over

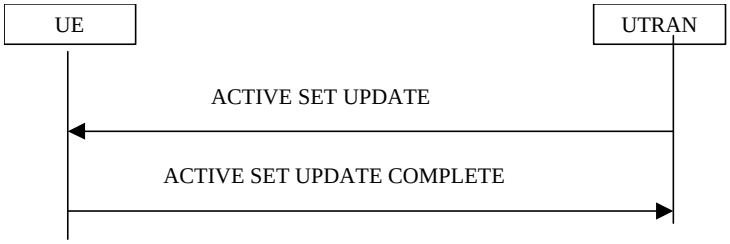



**Figure 16) Procedure for modifying the active set when in soft hand-over**

There are three alternative ways of modifying the active set which have been identified:

a) Radio link addition
b) Radio link removal
c) Combined radio link addition and removal

Radio link addition is triggered in the network RRC layer. The NW RRC first configures the new radio link. Transmission and reception begin immediately. The NW RRC then sends an ACTIVE SET UPDATE message to the UE RRC. The UE RRC configures layer 1 to begin reception. After confirmation from the physical layer in the UE an ACTIVE SET UPDATE COMPLETE message is sent to the NW RRC

Radio link removal is triggered by the network RRC layer. The radio link is first deactivated by the UE and then in the NW. The NW RRC sends an ACTIVE SET UPDATE message to the UE RRC. The UE RRC requests UE L1 to terminate reception of the radio link(s) to be removed. After this the UE RRC acknowledges radio link removal with an

ACTIVE SET UPDATE COMPLETE message to the NW RRC. The NW RRC proceeds to request the NW L1 to release the radio link.

The NW RRC determines the need for radio link replacement. When radio links are to be replaced, the NW RRC first configures the NW L1 to activate the radio link(s) that are being added. The NW RRC then sends an ACTIVE SET UPDATE message to the UE RRC, which configures the UE L1 to terminate reception on the removed radio link(s) and begin reception on the added radio link(s). If the UE active set is full, an old radio link has to be removed before a new one can be added. If the UE has only one radio link, then the replacement must be done in reverse order (first add, then remove). *Note: The present assumption is that the order of the replacement can be left to the UE.* The UE RRC acknowledges the replacement with an ACTIVE SET UPDATE COMPLETE message. The NW RRC then configures the NW L1 to terminate reception and transmission on the removed radio link.

*[Editors note: Presumably the radio link replacement procedure can be used for intra-frequency(make before break) hard hand-off]*

*[Editor's note: TDD active set update will also be supported if the L1 group identifies the requirement]*

### 8.3.5~~6~~5.2 Hard handover (FDD and TDD hard)

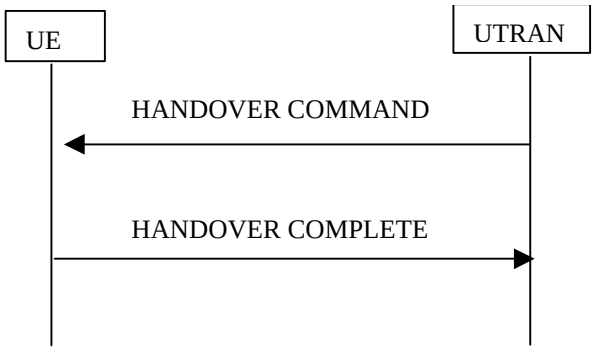



**Figure 17) Inter-frequency hard handover**

The NW RRC determines the need for inter-frequency hard handover and then configures the NW L1 to activate the new radio links. The NW L1 begins transmission and reception on the new links immediately. The NW RRC then sends the UE RRC a HANDOVER COMMAND message. The message indicates the radio resources that should be used for the new radio link, and can include a FAUSCH channel for the new cell, if the UE has not already been assigned a valid FAUSCH channel for the new cell. The UE RRC configures the UE L1 to terminate reception on the old radio link and begin reception on the new radio link.

After the UE L1 has achieved downlink synchronisation on the new frequency, a L2 link is established and the UE RRC sends a HANDOVER COMPLETE message to the NW RRC. After the L3 acknowledgement has been received, the NW RRC configures the NW L1 to terminate reception and transmission on the old radio link.

*[Note 1: Whether it should be possible to setup several radio links immediately on the new frequency is FFS.]*

*[Note 2: The suspension and resumption~~ing~~ of the CC and MM signalling during handover is FFS.]*

### 8.3.5~~6~~5.3 Inter system hard hand-over (GSM/BSS to UTRAN)

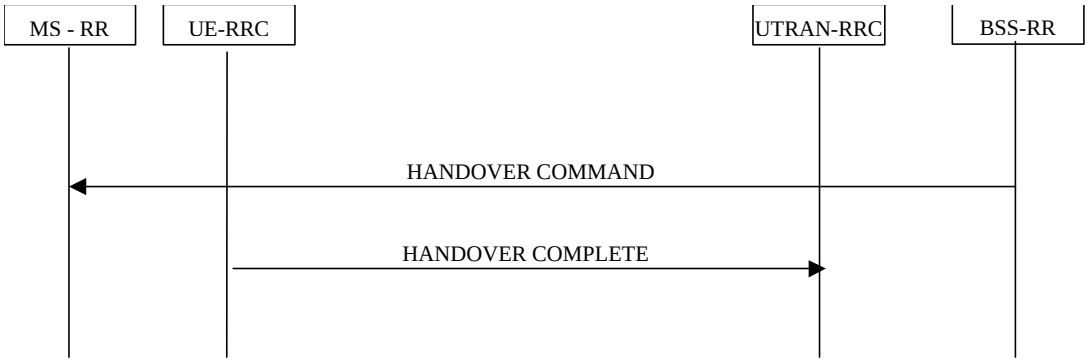



**Figure 18) Procedure for Inter-system hard hand-over - GSM to UTRAN**

The handover from GSM/BSS to UTRAN for a dual-mode GSM MS / UMTS UE is described.

On the network side, the RRC layer performs admission control and radio resource allocation, assigning an RNTI for the RRC connection and selecting radio resource parameters (such as transport channel type, transport format sets, etc).

The selected parameters including the RNTI, are transmitted to the UE via the upgraded GSM RR message HANDOVER COMMAND. Upon reception of the HANDOVER COMMAND message, the UE RRC configures L1 and L2 using these parameters to locally establish the DCCH logical channel . Layer 1 indicates to RRC when it has reached synchronisation. An RLC signalling link establishment is then initiated by the UE. A HANDOVER COMPLETE message is finally sent by the UE RRC.

## 8.3.5~~6~~~~5~~.4 Inter system hard hand-over (UTRAN to GSM/BSS, PSTN/ISDN domain services)

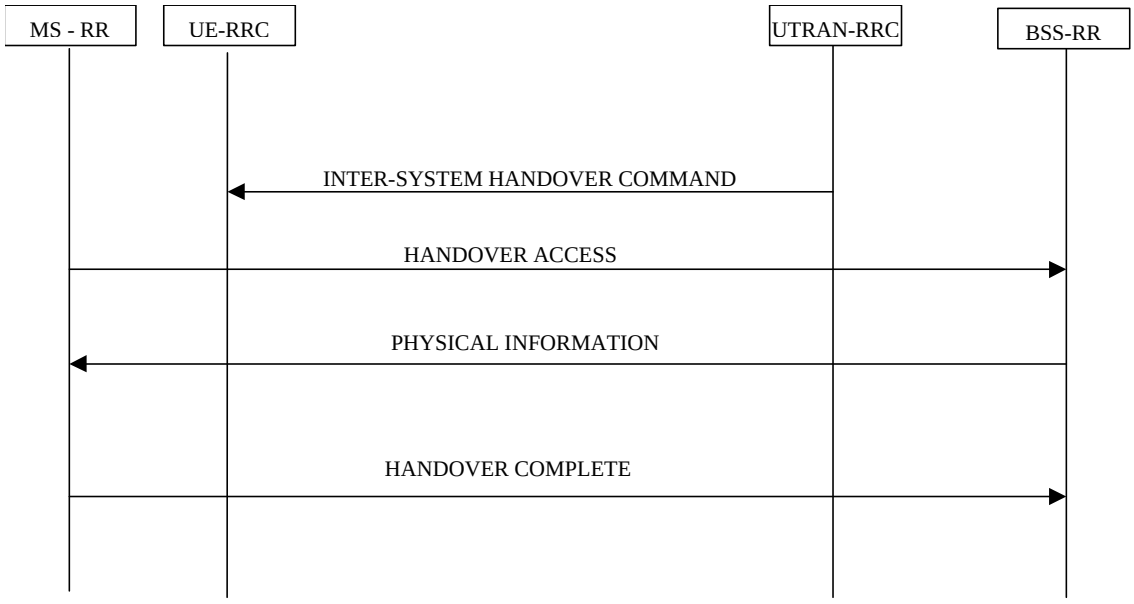



**Figure 19) Inter system hard hand-over (UTRAN to GSM/BSS), PSTN/ISDN services, successful case**

*[Note: The scope of this description is restricted to a UE having a connection only to PSTN/ISDN services, i.e. no simultaneous IP connection]*

For PSTN/ISDN domain services UTRAN Inter-System Handover procedure is initiated from the UTRAN.

The UTRAN RRC sends an INTER-SYSTEM HANDOVER COMMAND (type UTRAN-to-BSS HARD HANDOVER) to the UE to start the execution of the handover. This message contains all the information needed for the UE to be able to switch to the GSM cell and perform a GSM handover.

Upon reception of the HANDOVER COMMAND message, the UE RRC layer can then locally release the resources on the RLC, MAC and physical layers of the UE.

After having switched to the assigned GSM channel specified in the INTER-SYSTEM HANDOVER COMMAND, the MS RR sends a HANDOVER ACCESS message in successive layer 1 frames, just as it typically would have done for a conventional GSM handover initiation.

When the BSS-RR has received the HANDOVER ACCESS it indicates this to the CN/AS by sending a HANDOVER DETECT message. The BSS-RR sends a PHYSICAL INFORMATION message to the GSM MS in unacknowledged mode that contains various fields of physical layer ~~-~~related information allowing a proper transmission by the MS. After layer 1 and layer 2 connections are successfully established, the GSM MS returns the HANDOVER COMPLETE message.

The UTRAN is then able to release the resources that were used by the UE in UTRAN Connected Mode.

If the UE is unable to execute the Inter-System Handover or if low layer failure occurs~~happens~~ on the UE side ~~on the~~ GSM/BSS channel prior to ~~before~~ HANDOVER COMPLETE being~~has been~~ sent then~~,~~ the UE deactivates the new GSM/BSS channel and reactivates the UTRAN connection.

The UE then sends an INTER-SYSTEM HANDOVER FAILURE message and resumes normal operation as if no Inter-System Handover attempt had~~have~~ occurred.

### 8.3.5~~6~~5.5 ~~-~~Inter system cell reselection (UTRAN to GSM/GPRS, IP domain services)

For IP domain services, intersystem cell reselection from UTRAN to GSM/GPRS is initiated by the UE, or ordered by the network with the INTER-SYSTEM HANDOVER COMMAND message.

### 8.3.5~~6~~5.6 Inter system cell reselection (GSM/GPRS to UTRAN, IP domain services)

For IP domain services, intersystem cell reselection from GSM/GPRS to UTRAN is initiated by the MS~~UE~~ or by GSM/BSS according to GSM/GPRS specifications.

### 8.3.5~~6~~5.7 URA update

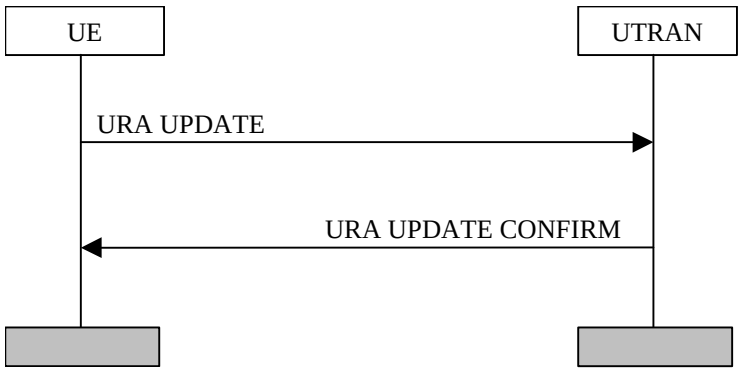



**Figure 20) URA update procedure.**

The URA update procedure is normally used by the UE to inform the UTRAN that the UE has switched to a new UTRAN registration area. In ~~that~~ this case, the procedure is triggered after change of cell and after the UE has~~ve read information broadcasted~~ decoded from the BCCH the URA identifier(s) valid in that cell. ~~by UTRAN indicating change of URA.~~ The procedure can also be triggered by expiry of a URA update periodicity timer in the UE.

UTRAN registration areas may be hierarchical to avoid excessive signalling. This means that several URA identifiers may be broadcast in one cell and that different UEs in onethat cell may reside in different URAs. A UE in URA connected state shall always have one and only one valid URA.

To perform the URA update procedure, Tthe UE shall establishes a radio link to a cell in the new URA. After that the the UE shall sends a URA UPDATE message to the UTRAN. Upon reception of the message the UTRAN registers the change of URA, and sends a URA UPDATE CONFIRM message to the UE. The URA UPDATE CONFIRM message may include a new C-RNTI and/or S-RNTI plus SRNC identity. In the latter case, the UE shall transmits an RNTI REALLOCATION COMPLETE message as confirmation. In cells where multiple URAs are valid, the UTRAN shall assign the URA to the UE in the URA UPDATE CONFIRM message. The URA UPDATE CONFIRM message may also contain new NAS system information.

*[Note1: Whether it should be possible for the UTRAN to trigger a URA update request from the UE is FFS.]*

## 8.3.565.8 Cell update

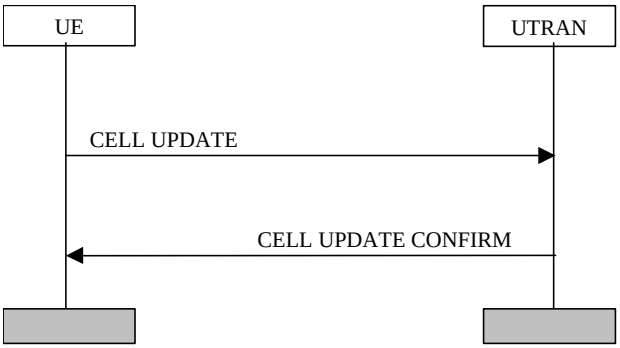



**Figure 21) Cell update procedure.**

The cell update procedure is normally used by the UE to inform the UTRAN that the UE has switched to a new cell. In this case, the procedure is a forward handover procedure, and is triggered after change of cell and after the UE has read information broadcasted by UTRAN. The procedure can also be triggered by expiry of a cell update periodicity timer in the UE or in cases when the UE requests a new C-RNTI.

In case of cell reselection, the UE abandons the radio link to the old cell and establishes a radio link to the new cell. After that the UE sends a CELL UPDATE message to the UTRAN. Upon reception of the message the UTRAN registers any change of cell, and sends a CELL UPDATE CONFIRM message to the UE.

The CELL UPDATE CONFIRM message may include a new C-RNTI and S-RNTI plus SRNC identity. In this case the UE configures layer 2 to use the new identities and returns an RNTI REALLOCATION COMPLETE message as confirmation. In the CELL UPDATE CONFIRM message, the network can instruct the UE to start updating its location on URA level. In the transition to URA connected state, the CELL UPDATE CONFIRM message shall include a URA assignment, if multiple URAs are valid in the current cell. It may The CELL UPDATE CONFIRM message may also contain new NAS system information.

The cell update procedure can also include an update onthe updating of which FAUSCH channel should be used in the new cell.

In case the UE is assigned a new C-RNTI and/or S-RNTI plus SRNC identity, a RNTI REALLOCATION COMPLETE message is sent by the UE to the network.

*[Note1: Whether it should be possible for the UTRAN to trigger a cell update request from the UE is FFS.]*

## 8.3.565.9 RNTI reallocation

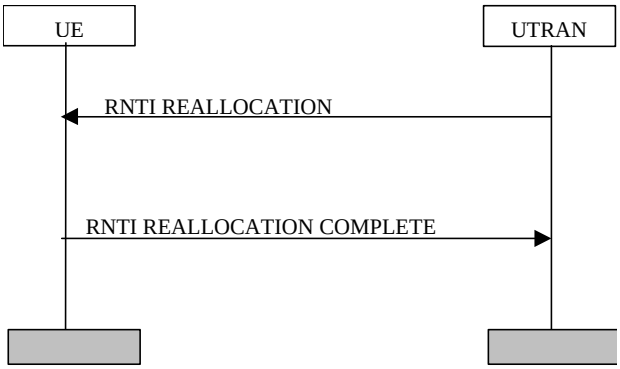



**Figure 22) RNTI reallocation procedure**

This procedure is used by the network, to assign new Radio Network Temporary Identity (RNTI) information to a UE. It is initiated by the UTRAN by the sending of~~, which sends~~ an RNTI REALLOCATION message. The RRC message contains new S-RNTI and SRNC identity~~,~~ and/or a new C-RNTI. It may also contain new NAS system information.

The UE starts to use the new identities and returns an RNTI REALLOCATION COMPLETE message as confirmation.

## 8.3.6~~7~~ RRC Connected mode procedures which use Paging

### 8.3.6~~7~~.1 Core network originated paging

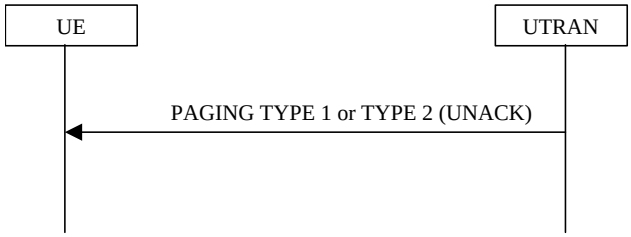



**Figure 23) Core network originated paging procedure in connected mode**

So far only one example of this procedure has been identified (two others are FFS):

a) UTRAN co-ordinates, UE is on DCCH (PAGING TYPE 2 message is used)
b) UTRAN co-ordinates, UE is on PCCH (FFS, PAGING TYPE 1 message would be used)
c) UE co-ordinates (FFS)

Consider case (a): This procedure enables the CN to request paging of a UE. Since the UE can be reached on the DCCH, the RRC layer formats a PAGING TYPE 2 message containing the UE paging identity and the NAS information, and the message is transmitted directly to the UE using unacknowledged data transfer.

*[Note: It is FFS whether only one paging message is required (as used for idle mode paging) or whether both Type 1 and Type 2 paging messages are required]*

### 8.3.6~~7~~.2 UTRAN originated paging

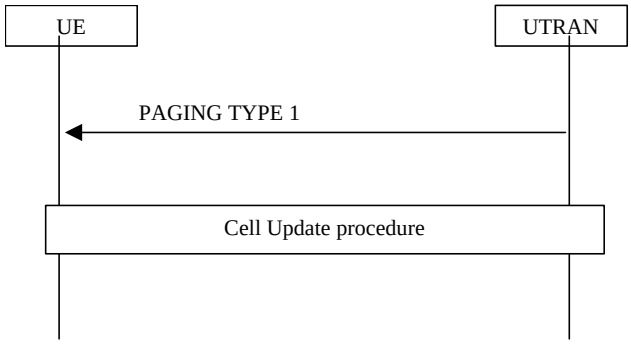



**Figure 24) UTRAN originated paging procedure in connected mode**

The RRC layer in the network can use this procedure to trigger a switch from PCH or URA connected state to RACH/FACH or RACH+FAUSCH/FACH state. A PAGING TYPE 1 message, containing the S-RNTI and SRNC identity is sent on the PCCH.

In the UE, the RRC layer continuously monitors the paging group on the PCH and compares the UE identities in the received paging messages with its own identities. When a match occurs, the RRC layer uses the cell update procedure to acknowledge the reception of paging and optionally obtain a new C-RNTI.

*[Note: It is FFS whether only only one paging message is required (as used for idle mode paging) or whether Type 1 and Type 2 paging messages are also required]*

## 8.3.78~~7~~ Procedures related to measurement and monitoring

~~*[Note: The following text needs to be reviewed at the next 3GPP WG2 meeting]*~~

~~In idle mode, the UE monitors and measures neighboring cells according to information received on BCH.~~

~~After sending the initial random access message, the UE may continue measurements using the 'idle' mode parameters until a MEASUREMENT CONTROL message is received from the serving RNS. This message indicates the parameters to be used for monitoring in ´connected` state.~~

Monitored cells are grouped in the UE into ~~three~~ two different categories:

1. Cells that belong to the **active set.** User information is sent from all these cells and they are simultaneously demodulated and coherently combined. These cells are involved in soft handover.

2. Cells that are not included in the active set, but are ~~identified as feasible for handover~~ monitored for handover belong to the ~~**candidate**~~ **monitored set.** ~~The UE may request that a cell in the candidate set is moved to the active set in a MEASUREMENT REPORT message.~~

~~3.Other cells that are known, but not currently feasible for handover, belong to the **neighbour set.** The UE does not notify the serving RNS when it moves a cell from the candidate set to the neighbour set or from the neighbour set to the candidate set.~~

From an RRC point of view, the ~~mobile station~~ UE measurements can be grouped with respect to the type of measurement performed in the ~~mobile station~~UE, i.e., what ~~and how~~ the ~~mobile station~~ UE shall measure. Examples are:

~~- Radio link measurements: measurements on downlink radio links in the active set.~~

- Intra-frequency measurements: measurements on downlink physical channels with the same frequency as the active set. ~~that do not belong to the active set, but have the same frequency as the active set.~~

- Inter-frequency measurements: measurements on downlink physical channels with frequencies that differ from the frequency of the active set.

- Inter-system measurements: measurements on downlink physical channels belonging to another radio access system than ~~WCDMA~~UTRAN, e.g. PDC or GSM.

- Traffic volume measurements: measurements on uplink traffic volume.

- Quality measurements: Measurements of quality parameters, e.g. downlink transport block error rate.

- Internal measurements: Measurements of UE transmission power and UE received signal level.

The same type of measurements can be used as input to different functions in UTRAN. For instance, an intra-frequency ~~A radio link~~ measurement in the ~~mobile station~~ UE can be used for handover, power control or operation and maintenance purposes in the network. However, it should be possible to have a number of ~~mobile station~~UE measurements running in parallel, where each measurement is controlled and reported independently of each other.

Each type of ~~mobile station~~ UE measurement is associated with a standardised measurement method that can be described with a limited number of parameters (threshold levels, triggering conditions etc) in the measurement control message from the network.

~~The measurement control message to the mobile station can be sent using either acknowledged or unacknowledged data transfer (L2 LAC-C) on the DCCH. The acknowledged mode would be employed for critical control messages, e.g. inter-frequency measurements intended for handover. The unacknowledged mode may be used for less critical measurements, e.g. mobile station measurements intended for operation and maintenance purposes.~~

The measurement report to the network can ~~likewise~~ be sent by either acknowledged or unacknowledged data transfer on the DCCH. The acknowledged mode may be employed for e.g. event-triggered measurement reports, while the unacknowledged mode may be used for e.g. periodical reporting with low ~~small~~ periodicity. The network ~~can~~ indicates (~~report~~ in the ~~mobile station~~ UE measurement control message) which reporting alternative the ~~mobile station~~ UE should use for the corresponding measurement.

~~Elementary RRC procedures that are required for UE measurements, and UE measurement reporting to the UTRAN, are identified and described below. The procedures are used in connected mode.~~

After sending the initial random access message, the UE shall continue measurements performed in idle mode until a MEASUREMENT CONTROL message is received from UTRAN. This message indicates e.g. the parameters to be used for monitoring in connected mode.

On the DCH, the UE shall report radio link related measurements to the UTRAN with a MEASUREMENT REPORT message. In order to receive information for the establishment of immediate macrodiversity, the UTRAN may also request the UE to append radio link related measurement reports to the following messages sent on the RACH:

- RRC CONNECTION REQUEST sent to establish an RRC connection.

- RRC CONNECTION RE-ESTABLISHMENT REQUEST sent to re-establish an RRC connection.

- DIRECT TRANSFER sent uplink to establish a signalling connection.

- CELL UPDATE sent to respond to a UTRAN originated page.

- MEASUREMENT REPORT sent to report uplink traffic volume.

*[Note~~OTE~~: Whether or not measured results can be appended to other messages and in other scenarios is FFS.-]*

## ~~8.3.7.1~~8.3.~~7~~8.1 Measurement control


**Figure 25) Measurement Control procedure**

This procedure is initiated from the UTRAN side to control a measurement in a specific UE. The UTRAN sends a MEASUREMENT CONTROL message to the UE on the DCCH. The message includes the information that controls the UE measurement. Examples of such information are:

1. **Measurement type**: One of the types from a predefined list where each type describes what the UE shall measure.
2. **Measurement identity number**: A reference number that is used by the UTRAN at modification of the measurement and by the UE in the measurement report.
3. **Measurement command**: One out of three different measurement commands
   - Setup: Setup a new measurement.
   - Modify: Modify a previously specified measurement, e.g. change the reporting criteria.
   - Release: Stop a measurement and clear all information in the UE that are related to that measurement.
4. **Measurement objects:** The objects the UE shall measure on, and corresponding object information.
5. **Measurement quantity:** The quantity the UE shall measure. This also includes the filtering of the measurements.
6. **Report quantities:** The quantities the UE shall include in the report in addition to the quantities that are mandatory to report for the specific event.
7. **Measurement reporting criteria**: The triggering of the measurement report, e.g. periodical or event-triggered reporting. This is also used to specify whether the measurement report should be transmitted using either acknowledged or unacknowledged data transfer on the DCCH.

*[Editor's note: Details of how this procedure can make use of slotted mode operation is still under investigation]*

### 8.3.7.2 Measurement reporting

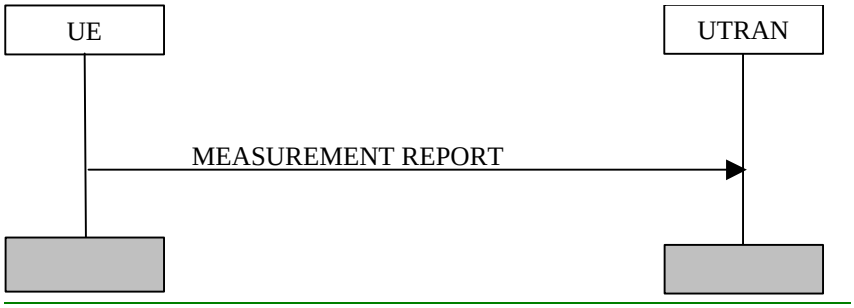



**Figure 26) Measurement Report procedure**

The Measurement Report procedure is initiated from the UE side when the reporting criteria are met. The message is sent using either acknowledged or unacknowledged data transfer on the DCCH. The UE sends a MEASUREMENT REPORT message to the UTRAN that includes the measurement identity number and the measurement results measured values of the mandatory and optional report quantities that were defined in the corresponding MEASUREMENT CONTROL message requested measurement objects.

*[Note: UE measurement reports can be sent without a prior Measurement Control message, e.g. reports of measurements that are predefined in the standard or defined via system information.]*

## 8.3.8 Other procedures in connected mode

### 8.3.8.1 Transmission of UE capability information

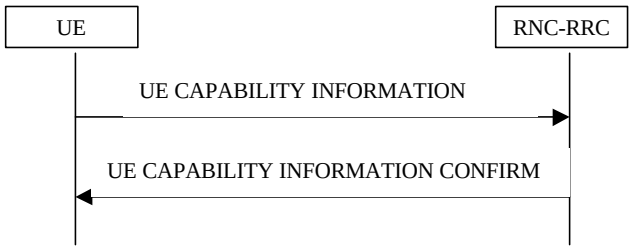
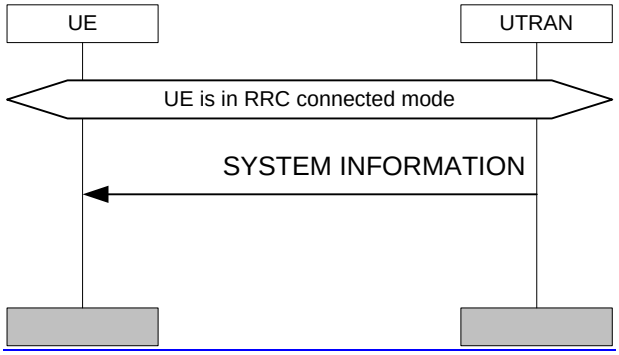



**Figure 27) Procedure for transmission of UE capability information**

The UE transfers its capability information to the network by transmitting the UE CAPABILITY INFORMATION message on the DCCH. The UTRAN acknowledges the successful update of UE capability by a UE CAPABILITY INFORMATION CONFIRM message. This procedure can (optionally) be performed after RRC Connection Setup procedure and also during the lifetime of the RRC Connection if the UE capability information changes (e.g. due to change in UE power class). UE capability information can also be explicitly ~~be~~ requested by the UTRAN *[Note: The mechanism for this is FFS].*

### 8.3.8.2 ~~-~~Sending of system information in RRC connected mode




**~~Figure 29)~~ Figure 28 Sending of system information to UE in RRC connected mode**

This procedure is used to transfer system information from the network to all connected mode UEs in a cell. ~~The UTRAN may send dedicated system information messages to the UE in RRC connected mode in order to update e.g. neighbouring cell and MM information. The UE RRC forwards received MM information to the UE MM sublayer. The system information messages transmitted in connected mode include different combinations of parameters than system information messages for idle mode MSs.~~

~~-~~The grouping of ~~of~~ system information ~~-~~blocks~~messages~~ is FFS.

Three ways have been identified by which this signalling can be conveyed:

- On DCCH *[Note: This is FFS. The DCCH might be used to send modified system information blocks directly to the UE.]*

- On BCCH *[Editors note, the BCCH may be used to convey information to a UE even when a DCCH exists. T~~, and~~ ~~the~~ the current assumption is that where a DCH exists the BCCH is not used]*
- On CCCH mapped onto a FACH or a DSCH control~~ACCH~~ transport channel (provided the DSCH control~~ACCH~~ transport channel exists). *[Editors note ,the CCCH may be used to convey information to a UE even when a DCCH exists]*.

The UTRAN can ~~shall~~ notify the UE when system information blocks carried on the BCCH are modified. There are two ways to notify the UE:

- On PCCH. The message PAGING TYPE 1 can~~shall~~ be sent to all UE's on the PCCH to indicate that the system information has been modified. The message includes the information element *BCCH Modification Information*.
- On CCCH. When system information is modified, the updated master information block can~~shall~~ be broadcast on CCCH to all UEs listening to the FACH.

### 8.3.8.3 Direct transfer

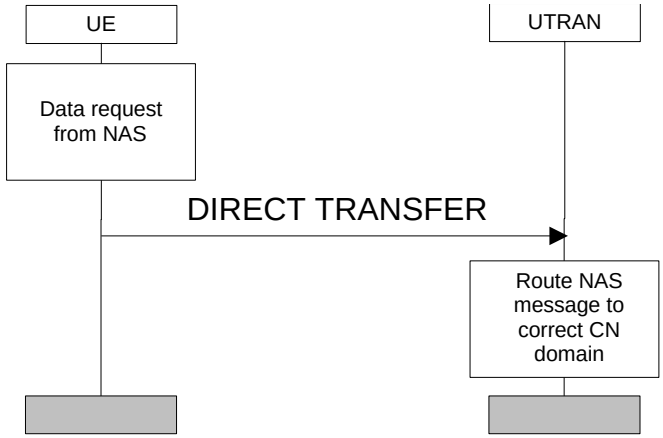



**Figure 29) Direct Transfer procedure in uplink**

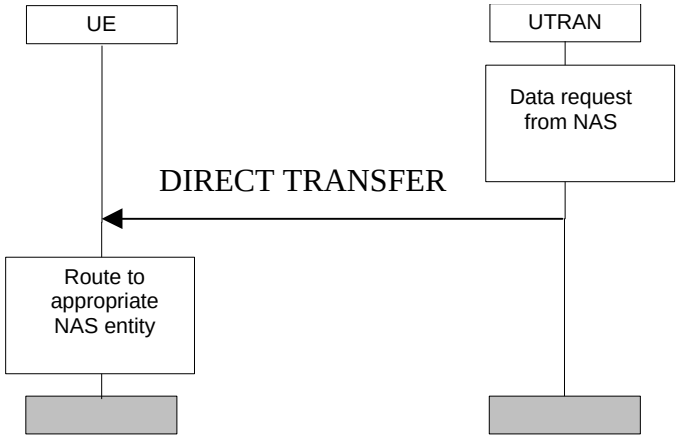



**Figure 30) Direct Transfer procedure in downlink**

The direct transfer procedure is used to carry all higher layer (NAS) messages over the radio interface. The DIRECT TRANSFER message includes the higher layer (NAS) message as payload and a CN domain identifier of the destination (in uplink) or originating (in downlink) core network node.

The DIRECT TRANSFER message is used both in uplink and in downlink and is conveyed on a DCCH.

Upon reception of the DIRECT TRANSFER message the higher layer PDU is routed – using the CN domain identifier parameter – in UE side to correct higher layer entity and in UTRAN side to correct CN domain.

### 8.3.8.4 RRC status procedure

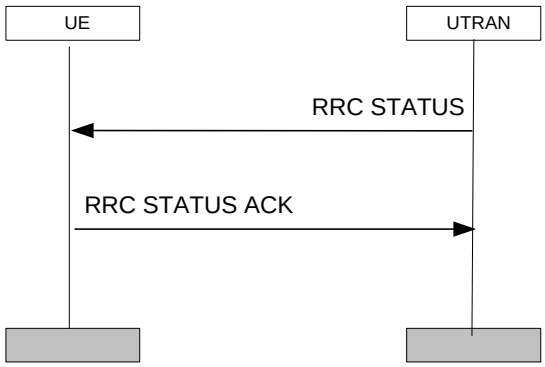



**Figure 31***: RRC status procedure*

*[Note: The following describes the use of the RRC status procedure for release of signalling connection. Other use of this procedure is FFS.]*

If a UE has signalling connections to CN1 and CN2, one of the nodes may request the UTRAN to release the RRC connection. In this case, without releasing the RRC connection the UTRAN needs to inform the corresponding MM entity in the UE ~~without releasing the RRC connection~~ that the signalling connection has been released, this is achieved using the RRC status procedure.

When the UTRAN receives a signalling connection release request from a core network node, it informs the UE of a signalling connection release with a RRC STATUS message. After receiving this message the UE RRC informs the corresponding UE MM entity of RRC connection release and sends a RRC STATUS ACK to the UTRAN. When the UTRAN receives the acknowledgement message~~,~~ it confirms the release of signalling connection to the core network node.

### 8.3.8.5 UE Capability Enquiry

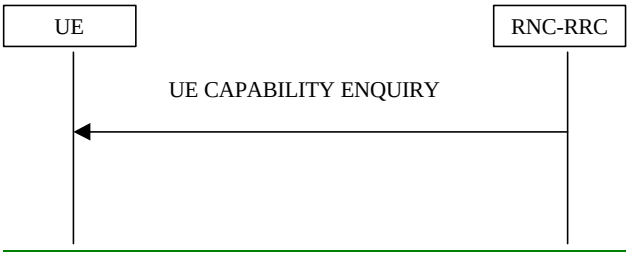



**Figure 32. UE capability Enquiry procedure.**

UE Capability Enquiry can be used to request the UE to transmit its capability information related to any radio access network that is supported by the UE. In particular, it can be used by the UTRAN to request an update of GSM capability information from a GSM-UMTS dual mode terminal~~UE~~.

The UE CAPABILITY ENQUIRY message is transmitted on the DCCH and it includes an indication of the desired UE capability information (e.g., GSM Classmark N)

# 9 Primitives between RRC and upper layers

# 10 Message and information element functional definition and content

The function of each Radio Resource Control message together with message contents in the form of a~~as a~~ list of i~~I~~nformation elements is defined in subclause 10.1.

F~~The f~~unctiona~~l~~s definitions of the i~~I~~nformation elements are then described in subclause 10.2.

Information elements are marked as either M- mandatory, O - Optional or C -conditional.

## 10.1 Radio Resource Control messages

### 10.1.1 RRC Connection Mobility Messages

#### 10.1.1.1 ACTIVE SET UPDATE

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH

Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| UE information elements | Activation time | | O | | |
| | | | | | |
| Phy CH information elements | Primary CCPCH info | | M | Note 1 | For each radio link to add |
| | SSDT cell identity | | O | | |
| | Downlink DPCH info | | M | | |
| | | | | | |
| | Primary CCPCH info | | M | Note 1 | For each radio link to delete |
| | | | | | |
| | SSDT indicator | | O | | |
| | | | | | |
| | | | | | |

*Note 1: If it is assumed that primary CCPCH downlink scrambling code is allways allocated with sufficient reuse distances, primary CCPCH downlink scrambling code will be enough for designating the different radiolinks.*

#### 10.1.1.2 ACTIVE SET UPDATE COMPLETE

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE→UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| Phy CH information elements | SSDT indicator | | O | |
| | | | | |
| | | | | |

### 10.1.1.3 CELL UPDATE

This message is used by the UE to initiate a cell update procedure.
RLC-SAP: t.b.d.
Logical channel: t.b.d.
Direction: UE→UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE information elements | S-RNTI | | M | FFS whether in RRC or MAC PDU. |
| | SRNC identity | | M | |
| | Cell update cause | | M | |
| | | | | |
| Measurement information elements | Measurement identity number | | | Intra-frequency measurement related report ~~(necessity is FFS)~~ |
| | Measured results | | | |
| | | | | |
| | | | | |

### 10.1.1.4 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: t.b.d.
Logical channel: t.b.d.
Direction: UTRAN→UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE information elements | S-RNTI | | M | FFS whether in RRC or MAC PDU. |
| | SRNC identity | | M | |
| | | | | |
| | S-RNTI | | O | New S-RNTI |
| | SRNC identity | | O | New SRNC identity |
| | C-RNTI | | O | New C-RNTI |
| | | | | |
| UTRAN mobility information elements | URA update indicator | | O | When present, it instructs UE to make URA updating |
| | URA identifier | | O | Indicates to the UE, which URA it shall use in case of overlapping URAs. |
| | | | | |
| CN information elements | PLMN identity | | O | (Note1,2) |

| | | | | |
|---|---|---|---|---|
| | CN domain identity | | O | For each CN domain (Note1,2) |
| | NAS system info | | O | For each CN domain (Note1,2) |
| | | | | |
| Physical CH information elements | Default DPCH Offset Value | | O | FFS |

[Note1: It depends on the length of these information whether this message can be used to notify these information to UE.]
[Note2: Necessity of PLMN is FFS and for CN domain identity and NAS system information, the confirmation in SA WG2 is needed.]

## 10.1.1.5 HANDOVER COMMAND

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| Phy CH information elements | Frequency info | | M | | |
| | | | | | |
| | UL DPCH power control info | | M | | |
| | | | | | |
| | UL DPCH info | | M | | Uplink radio resources |
| | | | | | |
| | UL timeslot info | | O | | |
| | | | | | |
| | Primary CCPCH info | | M | For each radio link. Note1 | Downlink radio resources |
| | | | | | |
| | DL DPCH info | | M | | |
| | | | | | |
| | DL timeslot info | | O | Note 2 | |
| | | | | | |
| | SSDT indicator | | O | | |
| | | | | | |
| | | | | | |

Note1: The possibility to request the establishment of several radio links simultaneously with this message is FFS.
Note 2: It is assumed that the DL timeslot configuration is the same for all radio links, whether or not macro-diversity is supported for TDD.

## 10.1.1.6 HANDOVER COMPLETE

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| Phy CH information elements | SSDT indicator | | O | |
| | | | | |
| | | | | |

## 10.1.1.7 INTER-SYSTEM HANDOVER 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-System message information element in this message. These messages are structured and coded according to that systems specification.

RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN→UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE information elements | Activation time | | O | |
| | | | | |
| Other information elements | Inter-System message | | M | |
| | | | | |
| | | | | |

## 10.1.1.8 INTER-SYSTEM HANDOVER FAILURE

This message is sent on the RRC connection used before the Inter-System Handover was executed. The message indicates that the UE has failed to seize the new channel in the other system.
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE→UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE information elements | Inter-System handover failure cause | | O | FFS |
| | | | | |
| Other Information elements | Inter-System message | | O | |
| | | | | |
| | | | | |

## 10.1.1.9 URA UPDATE

This message is used by the UE to initiate a URA update procedure.
RLC-SAP: t.b.d.
Logical channel: t.b.d.

Direction: UE→UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE information elements | S-RNTI | | M | FFS whether in RRC or MAC PDU. |
| | SRNC identity | | M | |
| | URA update cause | | M | |
| | | | | |
| | | | | |

## 10.1.1.10 URA UPDATE CONFIRM

<*Functional description of this message to be included here*>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: t.b.d.
Logical channel: t.b.d.
Direction: UTRAN→UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE information elements | S-RNTI | | M | FFS whether in RRC or MAC PDU. |
| | SRNC identity | | M | |
| | | | | |
| | S-RNTI | | O | New S-RNTI |
| | SRNC identity | | O | New SRNC identity |
| | C-RNTI | | O | New C-RNTI |
| | | | | |
| UTRAN mobility information elements | URA identifier | | O | Indicates to the UE, which URA it shall use in case of overlapping URAs. |
| | | | | |
| CN information elements | PLMN identity | | O | (Note1,2) |
| | CN domain identity | | O | For each CN domain (Note1,2) |
| | NAS system info | | O | For each CN domain (Note1,2) |
| | | | | |
| | | | | |

[Note1: It depends on the length of these information whether this message can be used to notify these information to UE.]
[Note2: Necessity of PLMN is FFS and for CN domain identity and NAS system information, the confirmation in SA WG2 is needed.]

## 10.1.1.11 RNTI REALLOCATION

<*Functional description of this message to be included here*>
RLC-SAP: t.b.d.
Logical channel: t.b.d.
Direction: UTRAN→UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE information elements | S-RNTI | | O | FFS whether in RRC or MAC PDU. |
| | SRNC identity | | O | |
| | | | | |
| | S-RNTI | | O | New S-RNTI |
| | SRNC identity | | O | New SRNC identity |
| | C-RNTI | | O | New C-RNTI |
| | | | | |
| CN information elements | PLMN identity | | O | (Note1,2) |
| | CN domain identity | | O | For each CN domain (Note1,2) |
| | NAS system info | | O | For each CN domain (Note1,2) |
| | | | | |
| | | | | |

[Note1: It depends on the length of these information whether this message can be used to notify these information to UE.]
[Note2: Necessity of PLMN is FFS and for CN domain identity and NAS system information, the confirmation in SA WG2 is needed.]

### 10.1.1.12 RNTI REALLOCATION COMPLETE

This message is used to confirm the new RNTI information for the UE.
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE→UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| | | | | |

## 10.1.2 Measurement Messages

### 10.1.2.1 MEASUREMENT CONTROL

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN→UE

| Information element category | Information elements | | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|---|
| | Message Type | | | M | |
| | | | | | |
| Measurement Information elements | Measurement Identity Number | | | M | |
| | | | | | |
| | Measurement Command | | | M | |
| | | | | | |
| | Measurement Type | | | O | |
| | | | | | |
| | Measurement Reporting Mode | | | O | |
| | | | | | |
| | Measurement Object | Intra-frequency cell info | | C | If Measurement Type = Intra frequency measurement |
| | | Inter-frequency cell info | | C | If Measurement Type = Inter frequency measurement |
| | | Inter-system cell info | | C | If Measurement Type = Inter system measurement |
| | | Traffic volume measurement object | | C | If Measurement Type = Traffic volume measurement |
| | | Quality measurement object | | C | If Measurement Type = Quality measurement |
| | | | | | |
| | Measurement Quantity (Note1) | Intra-frequency measurement quantity | | C | If Measurement Type = Intra frequency measurement |
| | | Inter-frequency measurement quantity | | C | If Measurement Type = Inter frequency measurement |
| | | Inter-system measurement quantity | | C | If Measurement Type = Inter system measurement |
| | | Traffic volume measurement quantity | | C | If Measurement Type = Traffic volume measurement |
| | | Quality measurement quantity | | C | If Measurement Type = Quality measurement |
| | | UE Internal measurement quantity | | C | If Measurement Type = UE Internal measurement |
| | | | | | |
| | Reporting quantity (Note2) | Intra-frequency measurement reporting quantity | | O | If Measurement Type = Intra frequency measurement |
| | | Inter-frequency measurement reporting quantity | | O | If Measurement Type = Inter frequency measurement |
| | | Inter-system measurement reporting quantity | | O | If Measurement Type = Inter system measurement |
| | | Traffic volume measurement reporting quantity | | O | If Measurement Type = Traffic volume measurement |
| | | Quality measurement reporting quantity | | O | If Measurement Type = Quality measurement |
| | | UE Internal measurement reporting quantity | | O | If Measurement Type = UE Internal measurement |
| | | | | | |
| | Measurement Reporting Criteria (Note3) | Intra-frequency measurement reporting criteria | | C | If Measurement Type = Intra frequency measurement |

| | | | | | |
|---|---|---|---|---|---|
| | | Inter-frequency measurement reporting criteria | | C | If Measurement Type = Inter frequency measurement |
| | | Inter-system measurement reporting criteria | | C | If Measurement Type = Inter system measurement |
| | | Traffic volume measurement reporting criteria | | C | If Measurement Type = Traffic volume measurement |
| | | Quality measurement reporting criteria | | C | If Measurement Type = Quality measurement |
| | | UE Internal measurement reporting criteria | | C | If Measurement Type = UE Internal measurement |
| | | Periodical reporting criteria | | C | |
| | | | | | |

Note 1: Necessary only in event trigger reporting mode.
Note 2: It is FFS whether it is necessary to separate the reporting quantity for each type.
Note 3: Periodical reporting criteria is used only in periodical reporting mode and others are used in event trigger mode.
Note 4: The network may order the UE to report other measurements when UE internal measurements are reported

## 10.1.2.2 MEASUREMENT REPORT

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE→UTRAN

| **Information element category** | **Information elements** | | **REFERENCE** | **TYPE** | **NOTE** | |
|---|---|---|---|---|---|---|
| | Message Type | | | M | | |
| | | | | | | |
| Measurement Information elements | Measurement Identity Number | | | M | | For each meas.rep. in this message (Note 1) |
| | | | | | | |
| | Event Result | Intra-frequency measurement event results | | C | Necessary only in event trigger reporting mode (Note 2) | |
| | | Inter-frequency measurement event results | | C | | |
| | | Inter-system measurement event results | | C | | |
| | | Traffic volume measurement event results | | C | | |
| | | Quality measurement event results | | C | | |
| | | | | | | |
| | Measured Results | | | O | Necessary only when indicated optionally by Reporting Quantity in Measurement Control | |
| | | | | | | |

*Note 1: If it is possible to send many measurement results that are identified by different measurement identity numbers in the same Measurement Report is FFS. An alternative solution is to admit only one measurement identity number per Measurement Report and concatenate different Measurement Reports in the RLC layer instead.*

*Note 2: If it is possible to send many measurement results that are identified by different events in the same Measurement Report is FFS.*

## 10.1.3 Paging and Notification Messages

### 10.1.3.1 NOTIFICATION

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: PCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| | | | | |

### 10.1.3.2 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: t.b.d.
Logical channel: PCCH
Direction: UTRAN → UE

| Information element Category | RRC Information element | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE Information elements | Paging record | | M | One paging record for each UE to be paged. |
| | | | | |
| Other information elements | BCCH modification info | | O | FFS |
| | | | | |
| | | | | |

### 10.1.3.3 PAGING TYPE 2

This message is used to page an UE in connected mode, when using the DCCH for CN originated paging.
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN → UE

| Information element Category | RRC Information element | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE Information elements | CN domain identity | | M | |
| | | | | |
| | Paging cause | | M | |
| | | | | |
| | | | | |
| | | | | |

## 10.1.4 RRC Connection Establishment and maintenance messages

### 10.1.4.1 RRC CONNECTION RE-ESTABLISHMENT

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: t.b.d.
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| Physical CH information elements | Default DPCH Offset Value | | O | |

### 10.1.4.2 RRC CONNECTION RE-ESTABLISHMENT COMPLETE

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| | | | | |

### 10.1.4.3 RRC CONNECTION RE-ESTABLISHMENT REQUEST

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: t.b.d
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| UE information elements | S-RNTI | | M | FFS whether conveyed on RRC or MAC. | |
| | SRNC identity | | M | | |
| | | | | | |
| Measurement information elements | Measurement identity number | | M | Refers to system information. Note 1 | For each measurement report |
| | Measured results | | M | | |
| | | | | | |
| | | | | | |

Note 1: The necessity and usage of Measurement identity number in this message is FFS.

## 10.1.4.4 RRC CONNECTION RELEASE

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN→UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE information elements | Release cause | | M | |
| | | | | |
| | Number of Quick Repeat | | M | |
| | | | | |
| | | | | |

## 10.1.4.5 RRC CONNECTION RELEASE COMPLETE

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| | | | | |

## 10.1.4.6 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: t.b.d.
Logical channel: CCCH
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| UE information elements | Initial UE identity | | M | FFS whether conveyed on RRC or MAC. | |
| | | | | | |
| | Establishment cause | | M | | |
| | | | | | |
| | Initial UE capability | | O | Necessity is FFS | |
| | | | | | |
| Measurement information elements | Measurement identity number | | M | Refers to system information. Note 1 | For each measurement report |
| | Measured results | | M | | |
| | | | | | |
| | | | | | |

Note 1: The necessity and usage of Measurement identity number in this message is FFS.

## 10.1.4.7 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: t.b.d.
Logical channel: CCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| UE information elements | Initial UE identity | | M | FFS whether conveyed on RRC or MAC. | |
| | | | | | |
| | S-RNTI | | M | | |
| | SRNC identity | | M | | |
| | C-RNTI | | O | Only if assigned to a common transport channel | |
| | Activation time | | O | | |
| | | | | | |
| RAB information elements | RAB identity | | M | Indicates the signalling link | |
| | | | | | |
| | Signalling link type | | M | | |
| | | | | | |
| | RAB multiplexing info | | M | For the signalling link | |
| | | | | | |
| TrCH information elements | TFCS | | O | Uplink TFCS | |
| | | | | | |
| | TFCS | | O | Downlink TFCS | |
| | | | | | |
| | TFC subset | | O | | |
| | | | | | |
| | Transport channel identity | | M | For each new transport channel | Uplink transport channels |
| | TFS | | M | | |
| | | | | | |
| | Transport channel identity | | M | For each new transport channel | Downlink transport channels |
| | TFS | | M | | |
| | | | | | |
| | | | | | |
| PhyCH information elements | Frequency info | | O | | |
| | | | | | |
| | Uplink DPCH power control info | | O | | |
| | | | | | |
| | Uplink DPCH info | | O | Maximum one of these | Uplink radio resources |
| | PRACH info | | O | | |
| | Uplink timeslot info | | O | | |
| | | | | | |
| | Primary CCPCH info | | O | For each radio link | Downlink radio resources |
| | Downlink DPCH info | | O | | |
| | Secondary CCPCH info | | O | | |
| | Downlink timeslot info | | O | Note 1 | |
| | | | | | |
| | SSDT indicator | | O | Necessity is FFS | |
| | | | | | |
| | Gated Transmission Control info | | O | FFS | |
| | Default DPCH Offset Value | | O | | |
| | | | | | |

Note 1: It is assumed that the DL timeslot configuration is the same for all radio links, whether or not macro-diversity is supported for TDD.

## 10.1.4.8x RRC CONNECTION SETUP COMPLETE

This message confirms the establishment of the RRC Connection by the UE.
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| Phy CH information elements | SSDT indicator | | O | Necessity is FFS |
| | | | | |

## 10.1.4.98 RRC CONNECTION REJECT

This message is transmitted by the network when the requested RRC connection cannot be accepted.
RLC-SAP: t.b.d.
Logical channel: CCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| UE information elements | Initial UE identity | | M | FFS whether conveyed on RRC or MAC. |
| | | | | |
| | Rejection cause | | M | |
| | | | | |
| | Wait time | | O | |
| | | | | |
| | | | | |

## 10.1.4.109 RRC STATUS

This message is transmitted by the network when the network requests UE to release one of several signalling connections.
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| CN information elements | CN domain identity | | M | |
| | | | | |
| | | | | |

## 10.1.4.110 RRC STATUS ACK

This message is transmitted by UE as an acknowledgement for RRC STATUS message.
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| | | | | |

## 10.1.5 Radio Access Bearer control messages

### 10.1.5.1 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: t.b.d.
Logical channel: DCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| UE Information elements | Activation time | | O | | |
| | C-RNTI | | O | Only RACH/FACH | |
| | | | | | |
| UTRAN mobility Information elements | URA update indicator | | O | When PCH shall be used, and when present, it instructs the UE to make URA updating | |
| | | | | | |
| PhyCH information elements | Uplink DPCH power control info | | O | | |
| | | | | | |
| | Frequency info | | O | | |
| | | | | | |
| | Uplink DPCH info | | O | Maximum one of these | Uplink radio resources |
| | PRACH info | | O | | |
| | Uplink time slot info | | O | | |
| | | | | | |
| | Primary CCPCH info | | O | For each radio link | Downlink radio resources |
| | Downlink DPCH info | | O | | |
| | Secondary CCPCH info | | O | For FACH | |
| | Secondary CCPCH info | | O | For PCH | |
| | Downlink timeslot info | | O | Note 1 | |
| | | | | | |
| | SSDT indicator | | O | Necessity is FFS | |
| | | | | | |
| | Gated Transmission Control info | | O | FFS | |
| | Default DPCH Offset Value | | O | | |
| | | | | | |

Note 1: It is assumed that the DL timeslot configuration is the same for all radio links, whether or not macro-diversity is supported for TDD.

### 10.1.5.2 PHYSICAL CHANNEL RECONFIGURATION COMPLETE

This message is sent from the UE when a physical channel reconfiguration has been done.
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| Phy CH information elements | SSDT indicator | | O | Necessity is FFS |
| | | | | |
| | | | | |

## 10.1.5.3 RADIO ACCESS 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: t.b.d.
Logical channel: DCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| UE Information elements | Activation time | | O | | |
| | C-RNTI | | | Only RACH/FACH | |
| | | | | | |
| RAB information elements | RAB identity | | M | | For each RAB affected by this message |
| | RLC info | | O | FFS | |
| | RAB multiplexing info | | M | | |
| | | | | | |
| TrCH information elements | TFCS | | O | for uplink DCHs | |
| | | | | | |
| | TFCS | | O | for downlink DCHs | |
| | | | | | |
| | TFC subset | | O | for DCHs in uplink | |
| | | | | | |
| | Transport channel identity | | O | For each removed transport channel | Uplink transport channels |
| | Transport channel identity | | O | For each reconfigured or added transport channel | |
| | | | | | |
| | TFS | | O | | |
| | Dynamic Control | | O | For each reconfigured or added transport channel controlled by DRAC | |
| | Transmission time validity | | O | | |

| | | | | | |
|---|---|---|---|---|---|
| | Time duration before retry | | O | | |
| | Silent period duration before release | | O | | |
| | | | | | |
| | Transport channel identity | | O | For each removed transport channel | Downlink transport channels |
| | Tranpsort channel identity | | O | For each reconfigured or added transport channel | |
| | TFS | | O | | |
| | | | | | |
| PhyCH information elements | Uplink DPCH power control info | | O | | |
| | | | | | |
| | Frequency info | | O | | |
| | | | | | |
| | Uplink DPCH info | | O | Maximum one of these | Uplink radio resources |
| | PRACH info | | O | | |
| | Uplink timeslot info | | O | | |
| | | | | | |
| | Primary CCPCH info | | O | For each radio link | Downlink radio resources |
| | Downlink DPCH info | | O | | |
| | Secondary CCPCH info | | O | | |
| | Downlink timeslot info | | O | Note 1 | |
| | | | | | |
| | SSDT indicator | | O | Necessity is FFS | |
| | | | | | |
| | Gated Transmission Control info | | O | FFS | |
| | Default DPCH Offset Value | | O | | |
| | | | | | |

Note 1: It is assumed that the DL timeslot configuration is the same for all radio links, whether or not macro-diversity is supported for TDD.

## 10.1.5.4 RADIO ACCESS BEARER RECONFIGURATION COMPLETE

This message is sent from the UE when a RAB and signalling link reconfiguration has been done.
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| **Information element category** | **Information elements** | **REFERENCE** | **TYPE** | **NOTE** |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| ~~RAB information elements~~ | ~~RAB identity~~ | | ~~M~~ | ~~For each reconfigured RAB~~ |
| | | | | |
| ~~TrCH information elements~~ | ~~Transport channel identity~~ | | ~~O~~ | ~~For each removed, reconfigured or added transport channel~~ |
| | | | | |
| Phy CH information elements | SSDT indicator | | O | Necessity is FFS |
| | | | | |
| | | | | |

## 10.1.5.5 RADIO ACCESS BEARER RELEASE

*<Functional description of this message to be included here>*

RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| UE Information elements | Activation time | | O | | |
| | C-RNTI | | O | Only RACH/FACH | |
| | | | | | |
| RAB information elements | RAB identity | | M | For each released RAB | |
| | | | | | |
| | RAB identity | | O | For each other RAB affected by this message | |
| | RAB multiplexing info | | O | | |
| | | | | | |
| TrCH information elements | TFCS | | O | for uplink DCHs | |
| | | | | | |
| | TFCS | | O | for downlink DCHs | |
| | | | | | |
| | TFC subset | | O | for DCHs in uplink | |
| | | | | | |
| | Transport channel identity | | O | For each removed transport channel | Uplink transport channels |
| | Transport channel identity | | O | For each reconfigured or added (FFS) transport channel | |
| | TFS | | O | | |
| | Dynamic Control | | O | For each reconfigured or added (FFS) transport channel, controlled by DRAC | |
| | Transmission time validity | | O | | |
| | Time duration before retry | | O | | |
| | Silent period duration before release | | O | | |
| | | | | | |
| | Transport channel identity | | O | For each removed transport channel | Downlink transport channels |
| | Transport channel identity | | O | For each reconfigured or added transport channel | |
| | TFS | | O | | |
| | | | | | |
| PhyCH information elements | Uplink DPCH power control info | | O | | |
| | | | | | |
| | Frequency info | | O | | |
| | | | | | |
| | Uplink DPCH info | | O | Maximum one of these | Uplink radio resources |
| | PRACH info | | O | | |
| | Uplink timeslot info | | O | | |
| | | | | | |
| | Primary CCPCH info | | O | For each radio link | Downlink radio resources |
| | Downlink DPCH info | | O | | |
| | Secondary CCPCH info | | O | | |
| | Downlink timeslot info | | O | Note 1 | |
| | | | | | |
| | | | | | |

Note 1: It is assumed that the DL timeslot configuration is the same for all radio links, whether or not macro-diversity is supported for TDD.

### 10.1.5.6 RADIO ACCESS BEARER RELEASE COMPLETE

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| ~~RAB information elements~~ | ~~RAB identity~~ | | ~~M~~ | ~~For each released RAB~~ |
| | | | | |
| ~~TrCH information elements~~ | ~~Transport channel identity~~ | | ~~O~~ | ~~For each removed, reconfigured or added transport channel~~ |
| | | | | |
| | | | | |

### 10.1.5.7 RADIO ACCESS BEARER SETUP

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| CN information elements | NAS binding info | | M | Transparent non access stratum info e.g. bearer identity. | |
| | CN domain identity | | | | |
| UE Information elements | Activation time | | O | | |
| | C-RNTI | | O | Only RACH/FACH | |
| | | | | | |
| RAB information elements | RAB identity | | M | For the new RAB | |
| | RLC info | | M | | |
| | RAB multiplexing info | | M | | |
| | | | | | |
| | RAB identity | | O | For each other RAB affected by this message | |
| | RAB multiplexing info | | O | | |
| | | | | | |
| TrCH information elements | TFCS | | O | for uplink DCHs | |
| | | | | | |
| | TFCS | | O | for downlink DCHs | |
| | | | | | |
| | TFC subset | | O | for DCHs in uplink | |
| | | | | | |
| | Transport channel identity | | O | For each removed transport channel | Uplink transport channels |
| | Transport channel identity | | O | For each reconfigured or added transport channel | |
| | TFS | | O | | |
| | Dynamic Control | | O | For each reconfigured or added transport channel, controlled by DRAC | |
| | Transmission time validity | | O | | |
| | Time duration before retry | | O | | |
| | Silent period duration before release | | O | | |
| | | | | | |
| | Transport channel identity | | O | For each removed (FFS) transport channel | Downlink transport channels |
| | Transport channel identity | | O | For each reconfigured or added transport channel | |
| | TFS | | O | | |
| | | | | | |
| PhyCH information elements | Uplink DPCH power control info | | O | | |
| | | | | | |
| | Frequency info | | O | | |
| | | | | | |
| | Uplink DPCH info | | O | Maximum one of these | Uplink radio resources |
| | PRACH info | | O | | |
| | Uplink timeslot info | | O | | |
| | | | | | |
| | Primary CCPCH info | | O | For each radio link | Downlink radio resources |
| | Downlink DPCH info | | O | | |
| | Secondary CCPCH info | | O | | |
| | Downlink timeslot info | | O | Note 1 | |
| | | | | | |
| | SSDT indicator | | O | Necessity is FFS | |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| | Gated Transmission Control info | | O | FFS |
| | Default DPCH Offset Value | | O | |
| | | | | |

Note 1: It is assumed that the DL timeslot configuration is the same for all radio links, whether or not macro-diversity is supported for TDD.

## 10.1.5.8 RADIO ACCESS BEARER SETUP COMPLETE

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| **Information element category** | **Information elements** | **REFERENCE** | **TYPE** | **NOTE** |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| ~~RAB information elements~~ | ~~RAB identity~~ | | ~~M~~ | ~~For each new RAB~~ |
| | | | | |
| ~~TrCH information elements~~ | ~~Transport channel identity~~ | | ~~O~~ | ~~For each removed, reconfigured or added transport channel~~ |
| | | | | |
| Phy CH information elements | SSDT indicator | | O | Necessity is FFS |
| | | | | |
| | | | | |

## 10.1.5.9 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: t.b.d.
Logical channel: DCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| UE Information elements | Activation time | | O | | |
| | C-RNTI | | O | Only RACH/FACH | |
| | Control-only-state-timer | | O | FFS | |
| | | | | | |
| TrCH information elements | TFCS | | O | for uplink DCHs | |
| | | | | | |
| | TFCS | | O | for downlink DCHs | |
| | | | | | |
| | TFC subset | | O | for DCHs in uplink | |
| | | | | | |
| | Transport channel identity | | O | For each reconfigured transport channel | Uplink transport channels |
| | TFS | | O | | |
| | Dynamic Control | | O | For each reconfigured transport channel, controlled by DRAC | |
| | Transmission time validity | | O | | |
| | Time duration before retry | | O | | |
| | Silent period duration before release | | O | | |
| | | | | | |
| | Transport channel identity | | O | For each reconfigured transport channel | Downlink transport channels |
| | TFS | | O | | |
| | | | | | |
| PhyCH information elements | Uplink DPCH power control info | | O | | |
| | | | | | |
| | Frequency info | | O | | |
| | | | | | |
| | Uplink DPCH info | | O | Maximum one of these | Uplink radio resources |
| | PRACH info | | O | | |
| | Uplink timeslot info | | O | | |
| | | | | | |
| | Primary CCPCH info | | O | For each radio link | Downlink radio resources |
| | Downlink DPCH info | | O | | |
| | Secondary CCPCH info | | O | | |
| | Downlink timeslot info | | O | Note 1 | |
| | | | | | |
| | SSDT indicator | | O | Necessity is FFS | |
| | | | | | |
| | Gated Transmission Control info | | O | FFS | |
| | Default DPCH Offset Value | | O | | |
| | | | | | |

Note 1: It is assumed that the DL timeslot configuration is the same for all radio links, whether or not macro-diversity is supported for TDD.

## 10.1.5.10 TRANSPORT CHANNEL RECONFIGURATION COMPLETE

This message is sent from the UE when a transport channel reconfiguration has been done.
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| ~~TrCH information elements~~ | ~~Transport channel identity~~ | | ~~M~~ | ~~For each reconfigured transport channel~~ |
| | | | | |
| Phy CH information elements | SSDT indicator | | O | Necessity is FFS |
| | | | | |
| | | | | |

Note: The usage of this message for indicating the cell the UE will select in the DCH->RACH/FACH case, is FFS.

### 10.1.5.11 TRANSPORT FORMAT COMBINATION CONTROL

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN→UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| TrCH information elements | TFC subset | | M | for DCHs in UL |
| | | | | |
| | | | | |

## 10.1.6 System Information Messages

### 10.1.6.1 SYSTEM INFORMATION

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: BCCH or DCCH or CCCH
Direction: UTRAN → UE

*NOTE: The division of the system information into messages is FFS.*

| Information element category | Information elements | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| CN information elements | PLMN Identity | | M | | |
| | CN domain identity | | M | | For each Core Network Domain.<br><br>Information must be included for at least one core network domain type. |
| | NAS system information | | M | | |
| | | | | | |
| UTRAN mobility information elements | URA identity | | M | | For each URA |
| | Information for periodic cell and URA update | | M | | *Note: not for each URA any more* |
| | Cell identity | | M | The necessity and usage of cell identity is FFS. | |
| | Cell selection and re-selection info | | M | | |
| | | | | | |
| UE information elements | Uplink access control info | | M | | |
| | | | | | |
| | Transmission probability | | O | For all UE having DCH controlled by DRAC procedure | For each class of UE Note2 |
| | Maximum bit rate | | O | | |
| | | | | | |
| PhyCH information elements | Frequency info | | O | For each RACH | |
| | PRACH info | | M | | |
| | | | | | |
| | Frequency info | | O | For each FACH on secondary CCPCH | |
| | Secondary CCPCH info | | M | | |
| | | | | | |
| | Frequency info | | O | For each PCH on secondary CCPCH | |
| | Secondary CCPCH info | | M | | |
| | | | | | |
| | PRACH power control info | | M | | |
| | | | | | |
| Measurement Information elements | Measurement Identity Number | | M | Note 1 | For each Intra-frequency measurement control |
| | | | | | |
| | Intra-frequency cell info | | M | For each measurement object | |
| | | | | | |
| | Intra-frequency measurement quantity | | M | | |
| | | | | | |
| | Intra-frequency measurement reporting criteria | | M | | |
| | Intra-frequency reporting quantity for RACH reporting | | C | Only included if RACH reporting is indicated in the reporting criteria | |

| | | | | | |
|---|---|---|---|---|---|
| | Measurement Identity Number | | M | Note 1 | For each Inter-frequency measurement control |
| | | | | | |
| | Inter-frequency cell info | | M | For each measurement object | |
| | | | | | |
| | Inter-frequency measurement quantity | | M | | |
| | | | | | |
| | Inter-frequency measurement reporting criteria | | M | | |
| | | | | | |
| | Measurement Identity Number | | M | Note 1 | For each Inter-system measurement control |
| | | | | | |
| | Inter-system cell info | | M | For each measurement object | |
| | | | | | |
| | Inter-system measurement quantity | | M | | |
| | | | | | |
| | Inter-system measurement reporting criteria | | M | | |
| | | | | | |
| | | | | | |

Note 1: The necessity and usage of Measurement identity number in this message is FFS.
Note 2: The split of parameters into several System Information message X is FFS.

## 10.1.7 Other Messages

### 10.1.7.1 UE CAPABILITY INFORMATION

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UE → UTRAN

| **Information element category** | **Information elements** | **REFERENCE** | **TYPE** | **NOTE** | |
|---|---|---|---|---|---|
| | Message Type | | M | | |
| | | | | | |
| CN information elements | NAS message | | M | Includes the CN capability information | |
| | | | | | |
| UE information elements | Power control capability | | M | | UTRAN capability information |
| | Code resource capability | | M | | |
| | UE mode capability | | M | | |
| | Transport CH support capability | | O | | |
| | Ciphering capability | | M | | |
| | Macro diversity capability | | M | | |
| | | | | | |
| Other information elements | Inter-system message | | O | Includes inter-system classmark | |
| | | | | | |

Note: The WG1 and WG4 discussion should be concluded before the contents of this message can be finalized.

### 10.1.7.2 UE CAPABILITY INFORMATION CONFIRM

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: UTRAN → UE

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| | | | | |

### 10.1.7.3 DIRECT TRANSFER

*<Functional description of this message to be included here>*
RLC-SAP: t.b.d.
Logical channel: DCCH
Direction: both

| Information element category | Information elements | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Message Type | | M | |
| | | | | |
| CN information elements | CN domain identity | | M | |
| | | | | |
| | NAS message | | M | |
| | | | | |
| Measurement information elements | Measured results | | O | Intra-frequency measurement related report |
| | | | | |

# 10.2 Information element functional definitions

## 10.2.1 CN Information elements

### 10.2.1.1 CN domain identity

Points out the core network domain (e.g. IP or PSTN/ISDN CN domain).

### 10.2.1.2 NAS binding info

A field with non-access stratum information to bind a RAB to the non-access stratum. This information is transparent to RRC.

### 10.2.1.3 NAS message

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

### 10.2.1.4 NAS system information

System information that belongs to the non-access stratum (e.g. LAC, RA code etc). This information is transparent to RRC.

### 10.2.1.5 PLMN identity

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| MCC, Mobile Country Code | | M | |
| MNC, Mobile Network Code | | M | |

## 10.2.2 UTRAN mobility Information elements

### 10.2.2.1 Cell identity

Identity of a cell within a PLMN.
*Note: The necessity and usage of this information element is FFS.*

### 10.2.2.2 Cell selection and re-selection info

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| Standby allowed reception level (dBm) | | M | | The usage of these parameters needs clarification FFS. |
| Standby prohibited reception level (dBm) | | M | | |
| Threshold for Cell Re-selection (dB) | | M | | |
| Allowed reception SIR (dB) | | M | | |
| Radio link timeout | | | | |

### 10.2.2.3 Information for periodic cell and URA update

FFS.

### 10.2.2.4 URA identity

Identity of the UTRAN Registration Area.

#### 10.2.2.5 URA update indicator

When present in a message, it instructs the UE to start to update its location on URA level.

## 10.2.3 UE Information elements

### 10.2.3.1 Uplink access control info

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Access class | | M | FFS |
| Dynamic persistence level | | M | FFS |

### 10.2.3.2 C-RNTI

The controlling RNC RNTI identifies an UE having a RRC connection within an controlling RNC.

### 10.2.3.3 S-RNTI

The serving RNC RNTI is allocated to an UE having a RRC connection and identifies the UE within its serving RNC.

### 10.2.3.4 SRNC identity

Identifies the serving RNC for an UE having an RRC connection.

### 10.2.3.5 Initial UE identity

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

| Parameters | REFERENCE | TYPE | NOTE | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| IMSI | | O | International Mobile Subscriber Identity | One of these NAS identities is used | |
| TMSI + LAI | | O | Temporary Mobile Subscriber Identity and Location Area Identity | | |
| P-TMSI + RAI | | O | Packet Temporary Mobile Subscriber Identity and Routing Area Identity | | |
| IMEI | | O | International Mobile Subscriber Identity | | |

*[Note: The use of these identities is pending confirmation from WG1 that the RACH can support the required payload when these types of ID are used]*

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### 10.2.3.6 Activation time

Activation Time defines the frame number (or offset to some known frame number) in which the operation/changes caused by the related message should be executed.
Current assumption is that a connection based CFN (Connection Frame Number) that is known by MS and SRNC could be used.

### 10.2.3.7 Wait time

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

### 10.2.3.8 Control-only-state timer

This IE indicates for how long the UE shall stay in the control-only-state. *Editors note: the exact usage of this IE needs some clarification.*

### 10.2.3.9 Paging record

| Parameters | REFERENCE | TYPE | NOTE | | |
|---|---|---|---|---|---|
| Paging originator | | M | UTRAN/CN | | |
| Paging cause | | C | For CN originated pages | | |
| CN domain identity | | | | | |
| | | | | | |
| IMSI | | O | International Mobile Subscriber Identity | One of these formats is used | For idle mode pages |
| TMSI | | O | Temporary Mobile Subscriber Identity | | |
| P-TMSI | | O | Packet Temporary Mobile Subscriber Identity | | |
| S-RNTI | | O | For connected mode pages | | |
| SRNC identity | | | | | |

### 10.2.3.10 Establishment cause

Cause for an RRC connection establishment request (originating call, emergency call, paging response, location update request, forward inter-system handover etc).

### 10.2.3.11 Release cause

Cause for release of RRC connection.

### 10.2.3.12 Rejection cause

Cause for rejection of RRC connection establishment request.

### 10.2.3.13 Paging cause

Cause for a CN originated page. *Editors note: The usage of this IE needs further clarification.*

### 10.2.3.14 Initial UE capability

This is the UE capability information given in the RRC connection request message. The exact type of information is FFS.

### 10.2.3.15 Power control capability

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Transmission power capability | | M | |
| | | | |
| | | | |

Note: The WG1 and WG4 discussion should be concluded before the contents of this IE can be finalized.

### 10.2.3.16 Code resource capability

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| DL multi-code capability | | | |
| UL multi-code capability | | | |
| DL Spreading factor capability | | | |
| UL Spreading factor capability | | | |

Note: The WG1 and WG4 discussion should be concluded before the contents of this IE can be finalized.

### 10.2.3.17 UE mode capability

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| System capability (UMTS/GSM/others) | | | |
| UMTS capability (TDD/FDD) | | | |
| Chip rate capability | | | |
| Radio Frequency capability | | | |
| Variable duplex distance capability | | | |

Note: The WG1 and WG4 discussion should be concluded before the contents of this IE can be finalized.

### 10.2.3.18 Transport channel support capability

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Maximum number of DCHs | | | |
| Support for Transport CH | | | |
| | | | |

Note: The WG1 and WG4 discussion should be concluded before the contents of this IE can be finalized.

### 10.2.3.19 Ciphering capability

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Ciphering Algorithm capability | | M | |
| | | | |
| | | | |

Note: The WG1 and WG4 discussion should be concluded before the contents of this IE can be finalized.

### 10.2.3.20 Macro diversity capability

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Maximum number of RLs | | M | |
| | | | |
| | | | |

Note: The WG1 and WG4 discussion should be concluded before the contents of this IE can be finalized.

### 10.2.3.21 Cell update cause

Indicates the cause for s cell update. Examples of causes are cell reselection and periodic cell update.

### 10.2.3.22 URA update cause

Indicates the cause for s URA update. Examples of causes are change of URA and periodic URA update.

### 10.2.3.23 Number of Quick Repeat

Indicates the number of quick repeat for RRC Connection Release Complete message.

### 10.2.3.24 Inter-system handover failure cause

The purpose of this IE is to provide a reason for the failure of the Inter-system handover.

### 10.2.3.25 Transmission probability

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

### 10.2.3.26 Maximum bit rate

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

### 10.2.3.27 Capability Update Requirement

This IE indicates to the UE, which is capable of inter-system handover, whether it should send a complete update of its capabilities in the given system (e.g. GSM) immediately after having established an RRC connection.

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| System | | M | E.g. GSM |
| Early Capability Update | | M | Yes / No |

~~3.3.~~

## 10.2.4 Radio Access Bearer Information elements

### 10.2.4.1 RAB identity

An identification number for the RAB affected by a certain message.

### 10.2.4.2 RLC info

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| RLC mode | | M | Indicates if the RLC entity for a certain RAB should use Acknowledged, Non Acknowledged or Transparent mode data transfer. *[Note: It is FFS if this parameter always is the same in both UL and DL.]* | Uplink RLC info |
| RLC in-sequence delivery | | O | Indication if RLC should preserve the order of higher layer PDUs that were transmitted through RLC. *[Note: It is FFS if this parameter always is the same in both UL and DL.]* | |
| RLC PDU size | | C | Size of RLC Protocol Data Units. See Note 1 | |
| RLC transmission window size | | O | A flow control parameter used to set the maximum number of RLC PDUs sent without getting them acknowledged | |
| RLC retransmission info | | M | This could be the number of attempts to retransmit a RLC PDU before it is discarded, or different timer values. | |
| RLC mode | | M | | Downlink RLC info |
| RLC in-sequence delivery | | O | | |
| RLC PDU Size | | M | Note 1 | |
| RLC transmission window size | | O | | |
| RLC retransmission info | | O | *Is this needed to send to the UE for downlink?* | |

*Note1: RLC PDU size may be derived from transport block size and not explicitly transfered across the radio interface.*

### 10.2.4.3 Signalling link type

The purpose of the Signalling Link Type information element is to indicate the RLC parameters needed for the signalling link.

Each possible value of Signalling Link Type information element refers to a predefined set of parameters. Details FFS.

### 10.2.4.4 RAB multiplexing info

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

| Parameters | REFERENCE | TYPE | NOTE | | |
|---|---|---|---|---|---|
| Transport channel identity | | O | This is the ID of a transport channel that this RAB could be mapped onto. | Uplink multi-plexing | For each multi-plexing option |
| Logical channel identity | | O | This parameter is used to distinguish logical channels multiplexed by MAC on a transport channel. | | |
| MAC logical channel priority | | O | This includes both priority between different users traffic when using a common or shared channel, and between different RABs (or logical channels) traffic for a certain user. Different priorities for one users´ RABs are mapped (through the MAC´s T and C/T MUXes) to the TFC selection algorithm. *[Note: Usage and precise meaning of this is FFS.]* | | |
| Transport channel identity | | O | | Downlink multi-plexing | |
| Logical channel identity | | O | | | |

Note: The necessity of dividing RAB multiplexing into in uplink and downlink is FFS.

## 10.2.5 Transport CH Information elements

### 10.2.5.1 Transport Format Combination Set

Indicates the allowed combinations of already defined Transport formats.

### 10.2.5.2 Transport Format Combination Subset

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

### 10.2.5.3 Transport channel identity

This information element is used to distinguish transport channels (both common and dedicated transport channels).

### 10.2.5.4 Transport Format Set (TFS)

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Transport block size(s) | | | (dynamic) |
| Transport Block Set Size(s) | | | (dynamic) |
| Transmission time interval | | | (semi-static) |
| Type of channel coding | | | (semi-static) |
| Rate matching | | | (semi-static) |

#### 10.2.5.5 Dynamic Control

Indicates if this transport channel is controlled by DRAC procedure or not.

#### 10.2.5.6 Transmission time validity

Indicates the duration for which permission is granted on a DCH controlled by DRAC procedure.

#### 10.2.5.7 Time duration before retry

Indicates the time duration before retrying to get the transmission permission on a DCH controlled by DRAC procedure, in case permission has not been granted.

#### 10.2.5.8 Silent period duration before release

Indicates the maximum silent period duration before releasing the resource. This parameter may be merged with the Fkp-b parameter defined in the 'Transmission stop and resumption control' procedure defined in [1].

(Note: [1] RAN/WG1 S1.14 document)

### 10.2.6 Physical CH Information elements

#### 10.2.6.1 Frequency info

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Frequency number | | M | Designate the centerfrequency of the uplink carrier |
| Duplex distance | | O | |
| Chip rate | | O | |
| Mode | | O | Designate FDD or TDD mode |

#### 10.2.6.2 Primary CCPCH info

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| DL scrambling code | | M | DL scrambling code used for Primary CCPCH |

#### 10.2.6.3 Secondary CCPCH info

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| DL scrambling code | | O | Only needed if different from DL scrambling code of Primary CCPCH |
| Channelization code | | M | |

#### 10.2.6.4 PRACH info

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Access slot | | M | For each allowed access slot for the preambles |
| Preamble spreading code | | M | For each code to use for spreading of the preamble. There is also a one to one mapping from preamble code to what scrambling code to use for the message part. |
| Preamble signature | | M | For each allowed preamble signature. |
| Spreading factor | | M | For each rate or SF that are allowed to use on the data part (I-branch) in the message part of the random access |

### 10.2.6.5 PRACH power control info

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| UL target SIR | | M | ~~The usage of these parameters needs clarification and are also dependent on the WG1 RACH discussions.~~ |
| Primary CCPCH DL TX power | | M | |
| UL interference | | M | |
| Constant value | | M | *Note: it should be clarified from WG1 whether this is the same as UL target SIR.* |
| AICH transmission timing parameter | | M | |
| Power offset $\Delta P_0$ | | M | Power step when no acquisition indicator is received |
| Power offset $\Delta P_1$ | | M | Power step when negative acquisition is received |

*NOTE: The usage of these parameters needs clarification and are also dependent on the WG1 RACH discussions.*

### 10.2.6.6 Uplink DPCH info

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| UL scrambling code | | M | What short or long uplink scrambling code a certain UE should use | |
| DPCCH channelization code | | M | SF of the channelization code for control part. *[The necessity of this parameter is FFS.]* | |
| DPDCH channelization code | | M | SF of the channelization code for data part | For each DPDCH |

### 10.2.6.7 Uplink DPCH power control info

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

### 10.2.6.8 Downlink DPCH info

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| DL scrambling code | | O | Only needed if different from DL scrambling code of Primary CCPCH | |
| DL channelization code | | M | Channelization codes to be used in the downlink for DPCH | For each DPCH |

### 10.2.6.9 Uplink timeslot info

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| Slot number | | M | Timeslot to be used in uplink (TDD only) | For each slot |

### 10.2.6.10 Downlink timeslot info

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| Slot number | | M | Timeslot to be used in downlink (TDD only) | For each slot |

### 10.2.6.11 SSDT indicator

This information element indicates the status (e.g. initiated/terminated) of the Site Selection Diversity Transmit power control (SSDT). In the direction UTRAN to UE it is used to change the SSDT status. In the direction UE to UTRAN it is used to confirm the SSDT status by the UE. The parameter 'code word set' indicates how cell identities are coded (using many bits or few, values are long, medium, or short).

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Code Word Set | | M | Values: long, medium, short, SSDT off |

### 10.2.6.12 SSDT cell identity

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

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| temporary id | | M | |

### 10.2.6.13~~2~~ Gated Transmission Control info (FFS)

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Gating pattern | | M | Indicates periodical or random (FFS) |
| Gating rate | | M | Indicates no gating, 1/2 gating, 1/4 gating or 1/8 gating (FFS) |
| Gating activation time | | M | FFS |

### 10.2.6.14 Default DPCH Offset Value

Indicates the default offset value within interleaving size at a resolution of 512chip (1/5 slot) 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.

## 10.2.7 Measurement Information elements

### 10.2.7.1 Measurement Identity Number

A reference number that is used by the UTRAN at modification and release of the measurement, and by the UE in the measurement report.

### 10.2.7.2 Measurement Command

One out of three different measurement commands

- Setup: Setup a new measurement.
- Modify: Modify a previously specified measurement, e.g. change the reporting criteria.
- Release: Stop a measurement and clear all information in the UE that are related to that measurement.

### 10.2.7.3 Measurement Type

One of the types from a predefined list where each type describes what the UE shall measure. The types are:

- Intra-frequency measurements
- Inter-frequency measurements
- Inter-system measurements
- Traffic volume measurements
- Quality measurements

### 10.2.7.4 Reference time difference to cell

The reference time difference to cell indicates the time difference between the primary CCPCH of the current cell and the primary CCPCH of a neighbouring cell. It is notified to UE by System Information or Measurement Control message.
In case of macro-diversity the reference is the primary CCPCH of one the cells used in the active set.

*Editors note: Exactly how the reference cell is pointed out in this case in the messages is FFS.*

### 10.2.7.5 Measured time difference to cell

~~The measured time difference to cell indicates the time difference which is measured by UE between the primary CCPCH of the current cell and the primary CCPCH of a neighbouring cell. It is notified to SRNC by Measurement Report message or Measurement Information Element in other RRC messages.~~
~~In case of macro-diversity the reference is the primary CCPCH of one the cells used in the active set.~~
The measured time difference to cell indicates the time difference which is measured by UE between CFN in the UE and the SFN of the target neighbouring cell. It is notified to SRNC by Measurement Report message or Measurement Information Element in other RRC messages.

~~*Editors note: Exactly how the reference cell is pointed out in this case in the messages is FFS.*~~

### 10.2.7.6 Measurement reporting mode

Contains the type of Measurement Report transfer mode and the indication of periodical/event trigger.

| **Parameters** | **REFERENCE** | **TYPE** | **NOTE** |
|---|---|---|---|
| Measurement Report Transfer Mode | | M | Acknowledged / Unacknowledged |
| Periodical Reporting / Event Trigger Reporting Mode | | M | Periodical reporting / Event trigger |

### 10.2.7.7 Intra-frequency cell info

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

| *Parameters* | *REFERENCE* | *TYPE* | *NOTE* |
|---|---|---|---|
| Primary CCPCH info | | M | |
| Primary CCPCH DL TX power | | O | |
| UL load | | O | FFS |
| ~~Reference time difference to cell~~ | | ~~O~~ | |
| SFN Measurement Indicator | | M | |

### 10.2.7.8 Inter-frequency cell info

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

| **Parameters** | **REFERENCE** | **TYPE** | **NOTE** |
|---|---|---|---|
| Frequency info | | M | |
| Primary CCPCH info | | M | |
| Primary CCPCH DL TX power | | O | FFS |
| UL load | | O | FFS |
| Reference time difference to cell | | O | FFS |

### 10.2.7.9 Inter-system cell info

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

| **Parameters** | **REFERENCE** | **TYPE** | **NOTE** |
|---|---|---|---|
| System type | | M | E.g. GSM |
| | | | |
| System specific measurement info | | | E.g frequency, timeslot, colour code, output power. |

### 10.2.7.10 Traffic volume measurement object

Contains the measurement object information for a traffic volume measurement.

| **Parameters** | **REFERENCE** | **TYPE** | **NOTE** |
|---|---|---|---|
| Target Transport CH ID | | M | |

### 10.2.7.11 Quality measurement object (FFS)

*(Note: Only the section is made.)*

### 10.2.7.12 Intra-frequency measurement quantity

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

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| Primary CCPCH RX $E_c/I_0$ | | O | | One of these is mandatory |
| Primary CCPCH RX SIR (RSCP/ISCP) | | O | FFS | |
| Primary CCPCH RX power (RSCP) | | O | FFS | |
| Path loss | | O | FFS | |
| Path loss plus UL load | | O | FFS | |

(Note: Above measurements except for Ec/Io are not concluded in WG1)

### 10.2.7.13 Inter-frequency measurement quantity (FFS)

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

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| $E_c/I_0$ | | O | FFS | One of these is mandatory |
| DL Path loss | | O | FFS | |
| SIR | | O | FFS | |
| DL path loss plus UL interference | | O | FFS | |
| Received signal code power (RSCP) | | O | FFS | |

### 10.2.7.14 Inter-system measurement quantity (FFS)

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

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| $E_c/I_0$ | | O | FFS | One of these is mandatory |
| Signal strength | | O | | |
| Path loss | | O | FFS | |
| Colour code | | M | GSM only | |

### 10.2.7.15 Traffic volume measurement quantity

Contains the measurement quantity information for a traffic volume measurement.

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| RLC buffer payload | | M | |

(Note: If there is no other measurement quantity, this parameter can be removed since it can be implicitly known by UE.)

### 10.2.7.16 UE ił~~n~~ternal measurement quantity

The quantity the UE shall measure in case of UE internal measurement.

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| UE Tx power | | O | | One of these is mandatory |
| UE RSSI | | O | | |

## 10.2.7.176 Quality measurement quantity (FFS)

*(Note: Only the section is made.)*

## 10.2.7.187 Intra-frequency reporting quantity

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

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Primary CCPCH RX $E_c/I_0$ | | O | |
| Primary CCPCH RX SIR (RSCP/ISCP) | | O | FFS |
| Primary CCPCH RX power (RSCP) | | O | FFS |
| ~~Path loss~~ | | ~~O~~ | ~~FFS~~ |
| Path loss plus UL load | | O | FFS |
| Measured time difference to cell | | O | |
| | | | |
| DL Transport CH BLER | | O | |
| DL Transport CH BER | | O | FFS |
| UE Transmission Power | | O | |
| UE Position | | O | |
| Cell ID | | O | FFS |

(Note: It is FFS whether the reporting quantity parameters used in different measurement types can be used commonly for all types of reporting quantity. If they can, only “Reporting Quantity” is enough instead of specifying 5 types of reporting quantity.)

## 10.2.7.19x Intra-frequency reporting quantity for RACH reporting

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

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Primary CCPCH RX $E_c/I_0$ | | O | |
| Primary CCPCH RX SIR (RSCP/ISCP) | | O | FFS |
| Primary CCPCH RX power (RSCP) | | O | FFS |
| Path loss plus UL load | | O | FFS |
| Measured time difference to cell | | O | |
| | | | |
| DL Transport CH BLER | | O | FFS |
| DL Transport CH BER | | O | FFS |
| UE Transmission Power | | O | FFS |
| UE Position | | O | FFS |
| Cell ID | | O | FFS |

## 10.2.7.2018 Inter-frequency reporting quantity (FFS)

*(Note: Only the section is made.)*

### 10.2.7.21~~19~~ Inter-system reporting quantity (FFS)

*(Note: Only the section is made.)*

### 10.2.7.2~~0~~ Traffic volume reporting quantity

Contains the reporting quantity information for a traffic volume measurement.

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| RLC buffer payload for each RAB | | O | |
| | | | |
| DL Transport CH BLER | | O | |
| DL Transport CH BER | | O | FFS |
| UE Transmission Power | | O | |
| UE Position | | O | |
| Cell ID | | O | FFS |

(Note: It is FFS whether the reporting quantity parameters used in different measurement types can be used commonly for all types of reporting quantity. If they can, only “Reporting Quantity” is enough instead of specifying 5 types of reporting quantity.

### 10.2.7.23~~1~~ Quality reporting quantity (FFS)

*(Note: Only the section is made.)*

### 10.2.7.24~~2~~ Intra-frequency measurement reporting criteria

The triggering of the event-triggered reporting for an intra-frequency measurement. All events concerning intra-frequency measurements are labeled 1x where x is a, b, c….
Event 1a: A Primary CCPCH enters the Reporting Range [Note1]
Event 1b: A Primary CCPCH leaves the Reporting Range [Note2]
Event 1c: A Non-active Primary CCPCH becomes better than an active Primary CCPCH [Note3]
Event 1d: Change of best cell [Note4, 5]
Event 1e: Other types of ranking of Primary CCPCHs (FFS)

| Parameters | | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | | | | |
| Common parameter for all events | Max number of reporting cells | | M | |
| | | | | |
| For each event | Event ID | | M | 1a, 1b, 1c, 1d or 1e |
| | Reporting Range | | C | In event 1a,1b |
| | Hysteresis | | O~~C~~ | In event 1a, 1b, 1c,1d |
| | Reporting deactivation threshold | | C | In event 1a<br>Indicates the maximum number of cells allowed in the active set in order for event 1a to occur. Value 0 indicates "not applicable". |

| | | | | |
|---|---|---|---|---|
| | Replacement activation threshold | | C | In event 1c<br>Indicates the minimum number of cells allowed in the active set in order for event 1c to occur. Value 0 indicates "not applicable". |
| | Time to trigger | | M | Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. |
| | *Amount of reporting* | | *M* | *Measurement for the indicated Transport CH ID is "released" after the indicated amount of reporting from the UE itself. FFS* |
| | *Reporting interval* | | *M* | *Indicates the interval of periodical reporting when such reporting is triggered by an ~~in~~ event~~nt triggered reports~~. A zero value indicates that event triggered periodical ~~;~~ reporting shall not be applied. ~~during the event is in the detected state FFS~~* |
| | | | | |
| For RACH measurement reporting | Maximum number of reported cells on RACH | | M | |
| | | | | |

[Note1: whether or not PCCPCH can be active is FFS]
[Note2: whether or not PCCPCH can be non-active is FFS]
[Note3: Details are FFS: It has been suggested to divide this event into two cases; I) a non-active PCCPCH exceeds the weakest active PCCPCH, II) a non-active PCCPCH exceeds the strongest active PCCPCH]
[Note4: When best PCCPCH in active set changes, all active cells are reported.]
[Note5: Whether this event can result in the reporting of non-active cells in addition to active cells is FFS.]

### 10.2.7.2~~3~~ Inter-frequency measurement reporting criteria (FFS)

The triggering of the measurement report, e.g. periodical, event-triggered or immediate reporting for an inter-frequency measurement. Here is also specified if the measurement report should be transmitted using either acknowledged or unacknowledged data transfer on the DCCH.

| Parameters | REFERENCE | TYPE | NOTE | |
|---|---|---|---|---|
| | | | | |

### 10.2.7.2~~4~~ Inter-system measurement reporting criteria (FFS)

The triggering of the measurement report, e.g. periodical, event-triggered or immediate reporting for an inter-system measurement. Here is also specified if the measurement report should be transmitted using either acknowledged or unacknowledged data transfer on the DCCH.

### 10.2.7.2~~5~~ Traffic volume measurement reporting criteria

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

| Parameters | | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| Common parameter for all transport CH | | | | |
| | | | | |
| For each transport CH | Transport CH ID | | M | |
| | Threshold | | M | |
| | Time to trigger | | M | Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. |
| | Pending time after trigger | | M | Indicates the period of time during which it is forbidden to send any new measurement reports with the same measurement ID even if the triggering condition is fulfilled again. |
| | Amount of reporting | | M | Measurement for the indicated Transport CH ID is "released" after the indicated amount of reporting from the UE itself.<br>FFS |
| | Reporting interval | | M | Indicates the interval of periodical report during the event is in the detected state<br>FFS |
| | | | | |

## 10.2.7.28~~6~~ Quality measurement reporting criteria (FFS)

*(Note: Only the section is made.)*

## 10.2.7.29~~7~~ UE i~~l~~nternal measurement reporting criteria

The triggering of the event-triggered reporting for a~~n~~ UE internal measurement. All events concerning UE internal measurements are labelled 6x where x is a, b, c….
Event 6a: The UE Tx power becomes larger than an absolute threshold
Event 6b: The UE Tx power becomes less than an absolute threshold
Event 6c: The UE Tx power reaches its minimum value
Event 6d: The UE Tx power reaches its maximum value
Event 6e: The UE RSSI reaches the UE's dynamic receiver range

| Parameters | | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | | | | |
| For each event | Event ID | | M | 6a, 6b, 6c, 6d or 6e |
| | Time-to-trigger | | M | Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. |
| | Tx power threshold | | C | In event 6a, 6b |
| | | | | |

## 10.2.7.30~~27~~ Periodical reporting criteria

Contains the periodical reporting criteria information. It is necessary only in the periodical reporting mode.

| Parameters | | REFERENCE | TYPE | NOTE |
|---|---|---|---|---|
| | Max number of reporting cells | | O | Indicates the maximum number of cells to report. |
| | | | | |
| | | | | |
| | Amount of reporting | | O | Measurement is “released” after the indicated amount of reporting from the UE itself |
| | Reporting interval | | O | Indicates the interval of periodical report. |
| | | | | |

### 10.2.7.31~~28~~ Intra-frequency measurement event results

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

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Event ID | | M | |
| Primary CCPCH info | | M | |
| | | | |
| | | | |

### 10.2.7.32~~29~~ Inter-frequency measurement event results (FFS)

This IE contains the measurement event results that are reported to UTRAN for inter-frequency measurements.
The further division of this IE into parameters is FFS.

### 10.2.7.3~~0~~ Inter-system measurement event results (FFS)

This IE contains the measurement event results that are reported to UTRAN for inter-system measurements.
The further division of this IE into parameters is FFS.

### 10.2.7.3~~1~~ Traffic volume measurement event results

Contains the event result for a traffic volume measurement.

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| Transport CH ID | | M | |

### 10.2.7.3~~2~~ Quality measurement event results (FFS)

*(Note: Only the section is made.)*

### 10.2.7.3~~3~~ 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.

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| RAB ID<br>+ RLC buffers payload | | O | |
| | | | |
| PCCPCH Info<br>+ Primary CCPCH RX $E_c/I_0$ | | O | |
| PCCPCH Info<br>+ Primary CCPCH RX SIR (RSCP/ISCP) | | O | FFS |
| PCCPCH Info<br>+ Primary CCPCH RX power (RSCP) | | O | FFS |
| PCCPCH Info<br>+ Path loss | | O | FFS |
| PCCPCH Info<br>+ Path loss plus UL load | | O | FFS |
| PCCPCH Info<br>+ Measured time difference to cell | | O | |
| | | | |
| DL Transport CH BLER | | O | |
| DL Transport CH BER | | O | FFS |
| UE Transmission Power | | O | |
| UE Position | | O | |
| Cell ID | | O | FFS |
| | | | |

### 10.2.7.37 SFN Measurement Indicator

Indicates whether the UE should read cell SFN of the target neighbour cell or not.

## 10.2.8 Other Information elements

### 10.2.8.1 BCCH modification info

Indicates modification of the System Information on BCCH.

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| BCCH modification type | | M | FFS |
| Modification time | | O | FFS |

### 10.2.8.2 Inter-system message

This Information Element contains one or several messages that are structured and coded according to the specification used for the system type indicated by the first parameter.

| Parameters | REFERENCE | TYPE | NOTE |
|---|---|---|---|
| System type | | M | E.g. GSM |
| Message(s) | | M | Formatted and coded according to specification for the indicated system type. |

# 11 Message and Information element abstract syntax (with ASN.1)

This chapter contains definitions for RRC PDUs and IEs using a subset of ASN.1 as specified in I2.01. PDU and IE definitions are grouped into separate ASN.1 modules.

*Note that the proposal is to keep both chapter 10 and 11 (at least until all messages and information elements are fully discussed and agreed by 3GPP RAN WG2). Chapter 10 is intended to give an abstract description (in English) of the messages and information elements whereas chapter 11 should contain the exact normative definitions with all necessary details.*

# 12 Message transfer syntax

Transfer syntax for RRC PDUs is derived from their abstract syntax definitions by use of encoding rules.

# 13 Protocol states

Service state diagram(s) of the RRC sublayer. (E.g. like in GSM0407.)

# 14 Protocol timers, counters and other parameters

Description of timers and counters and possible other parameters related to RRC procedures.

# 15 Specific functions ~~(if applicable)~~

## 15.1 Intra-frequency measurements

### 15.1.1 Intra-frequency measurement quantities

1. Downlink $E_c/I_0$ (chip energy per total received channel power density)
2. *Downlink path loss. (FFS)*
3. *Downlink received signal code power (RSCP) after despreading. (FFS)*
4. *Downlink signal-to-interference ratio (SIR) after despreading on a specific DL physical channel (RSCP/ISCP).(FFS)*

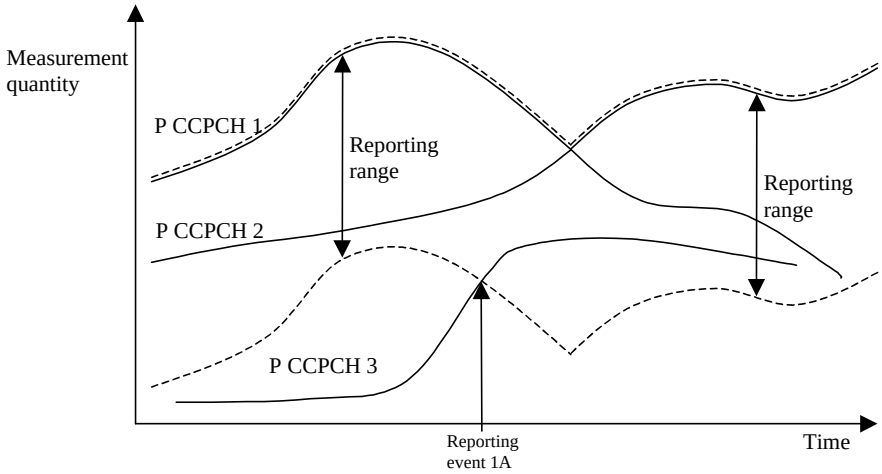
### 15.1.2 Intra-frequency reporting events

Within~~I~~n the m~~M~~easurement reporting criteria field in the Measurement Control message~~s,~~ the UTRAN notifies the UE which events ~~that~~ should trigger a measurement report. Examples of intra-frequency reporting events that would be useful for intra-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~~ere~~ the UTRAN can choose the reporting events that are needed for the implemented handover evaluation function, or other radio network functions.

All the illustrated events are measured with respect to any of the measurement quantities given in section 15.1~~3~~.1. The measurement objects are the monitored primary common control physical channels (P-CCPCH). The reporting events are marked with vertical arrows in the figures below.

*[Note: The events below are numbered 1A, 1B, 1C,… since all intra-frequency reporting events would be label~~l~~led 1X, inter-frequency reporting events would be label~~l~~led 2X, and so on for the other measurement types.]*

#### 15.1.2.1 Reporting event 1A: A Primary CCPCH enters the reporting range




**~~Figure 1:~~ Figure 33 Event-triggered report when a primary CCPCH enters the reporting range.**

When event 1A is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when a primary CCPCH~~s~~ enters the reporting range. The reporting range is defined relative to the best primary CCPCH and is given in the measurement reporting criteria field in the MEASUREMENT CONTROL message.

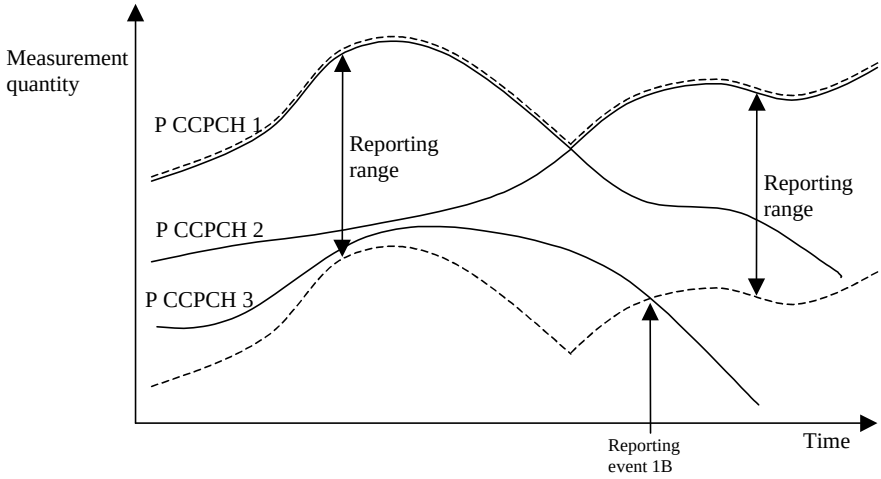
The addition window of cells in event 1A is configured with the **reporting range** parameter common to many reporting events and an optional **hysteresis** parameter, which can be used to distinguish the addition window from reporting windows related to other measurement events.

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

Event 1A may be enhanced with an addition timer, which is configured with the **time-to-trigger** parameter (see section 15.1.4.2~~x.x.x.x~~). If a time-to-trigger value is used, a cell must continuously stay within the reporting range for the given time period, before the UE shall send a measurement report.

*[Note: It is FFS, whether the cells triggering event 1A may be in the active set.]*

## 15.1.2.2 Reporting event 1B: A primary CCPCH leaves the reporting range




**~~Figure 2:~~ Figure 34 Event-triggered report when a primary CCPCH leaves the reporting range.**

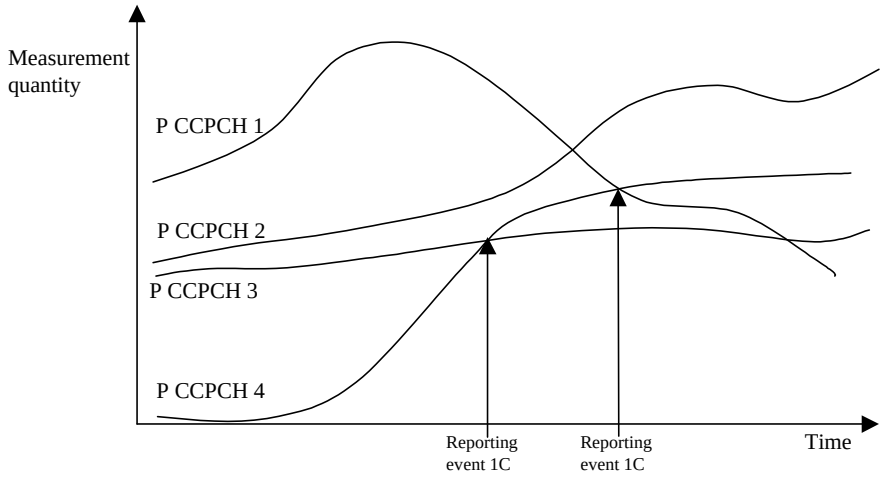
When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when a primary CCPCH~~s~~ leaves the reporting range. The reporting range is defined relative to the best primary CCPCH and is given in the measurement reporting criteria field in the MEASUREMENT CONTROL message.

The drop window of cells in event 1B is configured with the **reporting range** parameter common to many reporting events and an optional **hysteresis** parameter, which can be used to distinguish the drop window from reporting windows related to other measurement events.

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

*[Note: It is FFS whether cells triggering event 1B may belong to the monitored set cells, which are currently not in the active set]*

### 15.1.2.3 Reporting event 1C: A non-active primary CCPCH becomes better than an active primary CCPCH



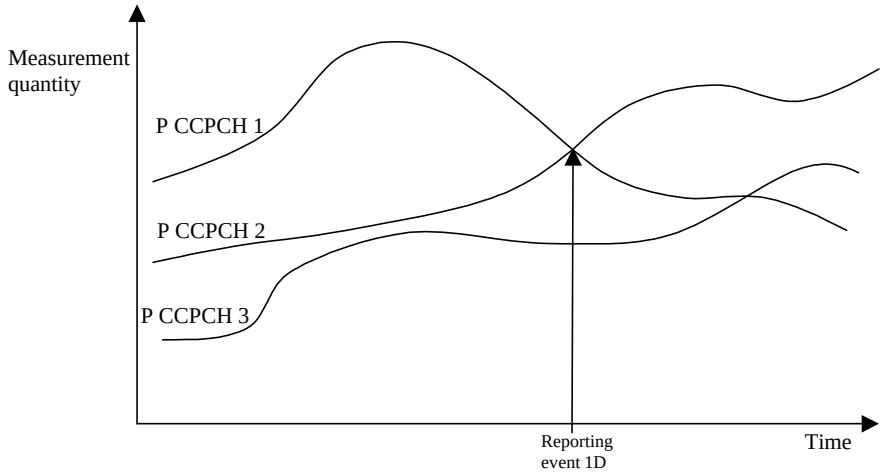

**~~Figure 3:~~ Figure 35 A primary CCPCH that is not included in the active set becomes better than a primary CCPCH that is in the active set.**

In this example the cells belonging to P-CCPCH 1, 2 and 3 are supposed to be in the active set, but the cell transmitting P-CCPCH 4 is not (yet) in the active set.

If a primary CCPCH that is not included in the active set becomes better than a primary CCPCH that is in the active set, and event 1C has been ordered by UTRAN, this event shall trigger a report to be sent from the UE.

This event may be used for replacing cells in the active set. It is activated if the number of active cells is equal to or greater than a **replacement activation threshold** parameter that UTRAN signals to the UE in the MEASUREMENT CONTROL message. This parameter indicates the minimum number of cells required in the active set for measurement reports triggered by event 1C to be transmitted.

### 15.1.2.4 Reporting event 1D: Change of best cell




**~~Figure 3:~~ Figure 36 A primary CCPCH becomes better than the previously best primary CCPCH.**

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

### 15.1.2.5 Reporting event 1E: A Primary CCPCH becomes better than an absolute threshold

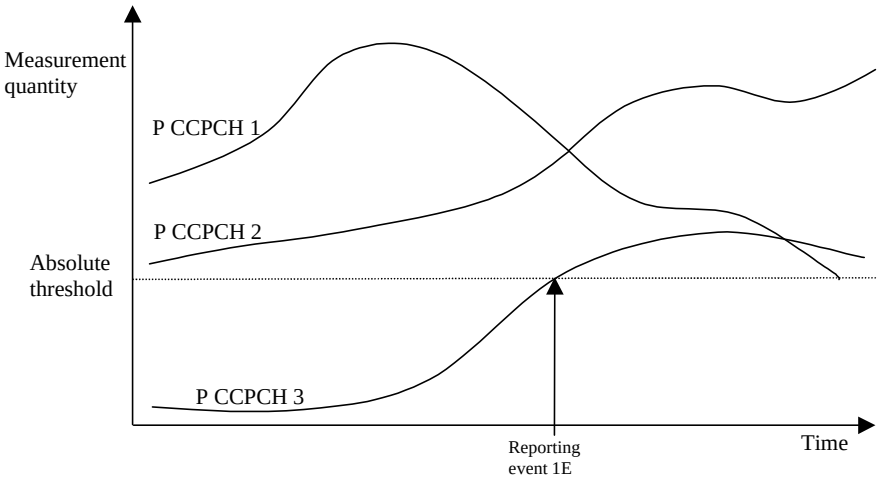



**Figure 37 Event-triggered report when a Primary CCPCH becomes better than an absolute threshold.**

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

### 15.1.2.6 Reporting event 1F: A Primary CCPCH becomes worse than an absolute threshold

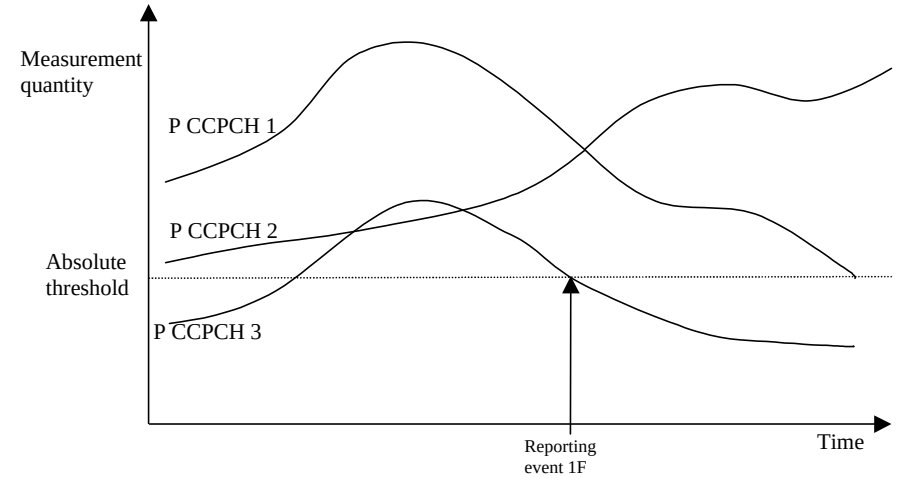



**Figure 38 Event-triggered report when a Primary CCPCH becomes worse than an absolute threshold.**

When this event is ordered by the UTRAN in a measurement control message the UE shall send a report when a primary CCPCH becomes worse than an absolute threshold. The corresponding report contains (at least) the involved Primary CCPCH.

## 15.1.3 Event-triggered periodic intra-frequency measurement reports

### 15.1.3.1 Cell addition failure

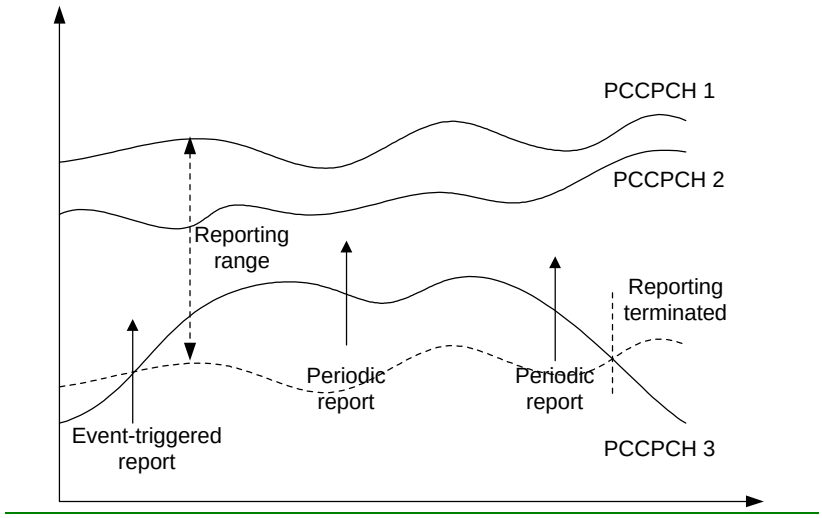



**Figure 39 Periodic reporting triggered by event 1A**

When a cell enters the reporting range and triggers event 1A, the UE shall transmit a MEASUREMENT REPORT to the UTRAN and typically this may result in an update of the active set. However, in some situations the UTRAN may be unable to add a strong cell to the active set typically due to capacity shortage for example.

The UE shall continue reporting after the initial report by reverting to periodical measurement reporting if the reported cell is not added to the active set. This is illustrated in Figure 39. During periodic reporting the UE shall transmit

MEASUREMENT REPORT messages to the UTRAN at predefined intervals. The reports shall include reporting information of the cells in the current active set and of the monitored cell(s) in the reporting range.

Event-triggered periodic measurement reporting shall be terminated either when there are no longer any monitored cell(s) within the reporting range or when the UTRAN has added cells to the active set so that it includes the maximum number of cells (defined by the **reporting deactivation threshold** parameter), which are allowed for event 1A to be triggered.

The reporting period is assigned by the UTRAN. If the reporting period is set to zero event-triggered measurement reporting shall not be applied.

### 15.1.3.2 Cell replacement failure

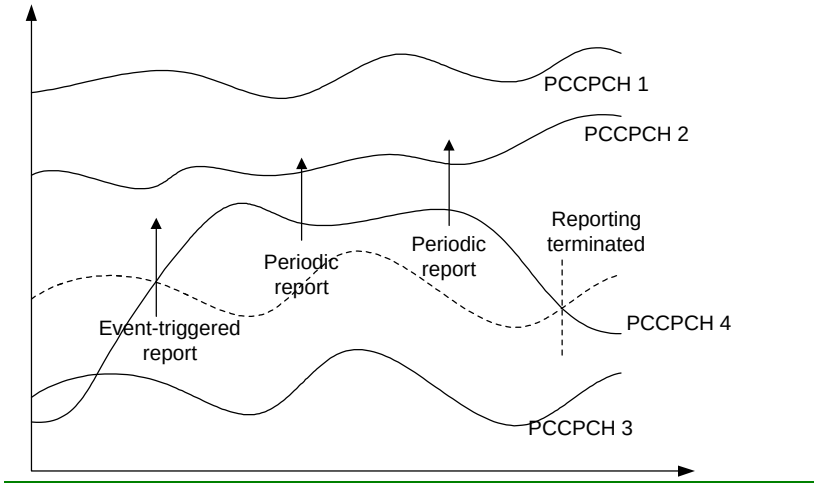



**Figure 40 Periodic reporting triggered by event 1C**

When a cell enters the replacement range and triggers event 1C, the UE shall transmit a MEASUREMENT REPORT to the UTRAN and typically this may result in the replacement of the weakest active cell. If the UTRAN is unable to replace the cell due to for example capacity shortage, it is beneficial to receive continuous reports in this case as well.

The UE shall revert to periodical measurement reporting if the UTRAN does not update the active set after the transmission of the measurement report. This is illustrated in Figure 40. During periodic reporting the UE shall transmit MEASUREMENT REPORT messages to the UTRAN at predefined intervals. The reports shall include reporting information of the cells in the current active set and of the monitored cell(s) in the replacement range.

Event-triggered periodic measurement reporting shall be terminated either when there are no longer any monitored cell(s) within the replacement range or when the UTRAN has removed cells from the active set so that there are no longer the minimum amount of active cells for event 1C to be triggered (as defined by the **replacement activation threshold** parameter).

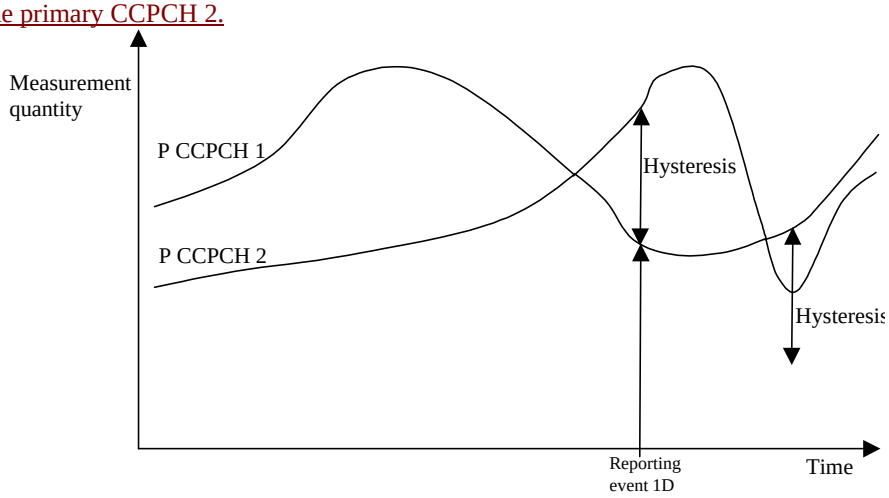
The reporting period is assigned by the UTRAN. If the reporting period is set to zero, event-triggered measurement reporting shall not be applied.

## 15.1.43 ~~Intra-frequency reporting m~~Mechanisms available for modifying intra-frequency measurement reporting behaviour

### 15.1.4~~3~~.1 Hysteresis

To limit the amount of event-triggered reports, a hysteresis parameter may be connected with each reporting event given above. The value of the hysteresis is given to the UE in the Reporting criteria field of the Measurement Control message.

In the example in ~~figure 7~~Figure 41, the hysteresis ensures ~~results in~~ that the event 1D (~~that~~ primary CCPCH 2 becomes the best cell) is not reported until the difference is equal to the hysteresis value. The fact that primary CCPCH 1 becomes best afterwards is not reported at all in the example since the primary CCPCH 1 does not become sufficiently ~~much~~ better than the primary CCPCH 2.

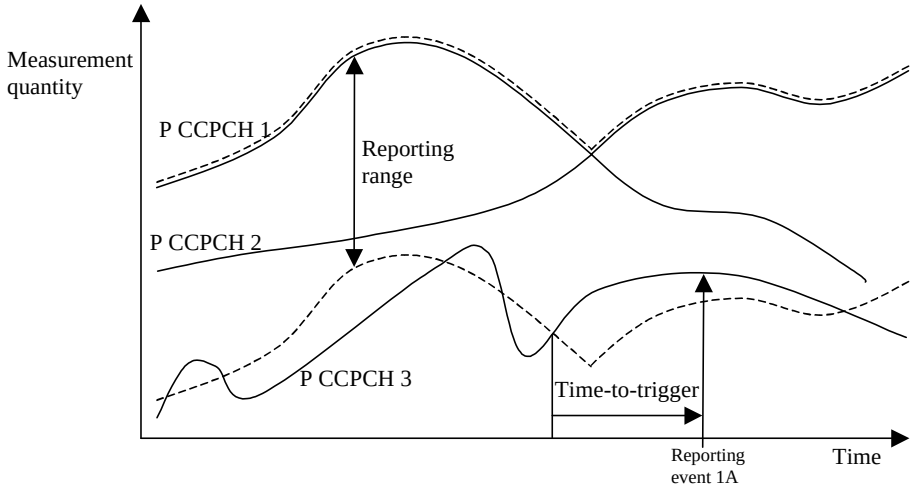



**~~Figure 7:~~Figure 41 Hysteresis limits the amount of measurement reports.**

## 15.1.4~~3~~.2 Time-to-trigger

To limit the measurement signalling load, a time-to-trigger parameter could be connected with each reporting event given above. The value of the time-to-trigger is given to the UE in the Reporting criteria field of the Measurement Control message.

The effect of the time-to-trigger is that the report is triggered only after ~~that~~ the conditions for the event have existed for the specified time-to-trigger. In the example in ~~figure 8~~Figure 42, the use of time-to-trigger means ~~causes~~ that the event ~~that~~ (primary CCPCH 3 enters the reporting range) is not reported until is has been within the range for the time given by the time-to-trigger parameter.




~~Figure 8:~~ **Figure 42 Time-to-trigger limits the amount of measurement reports.**

Note that the time-to-trigger could be combined with hysteresis, i.e. a hysteresis value is added to the measurement quantity before evaluating if the time-to-trigger timer should be started.

## 15.1.43.3 Cell individual offsets

ForTo each cell that is monitored, an offset can be assigned with inband signalling. The offset can be either positive or negative. The offset is added to the measurement quantity before the UE evaluates if an event has occurred. The UE receives the cell individual offsets for each primary CCPCH in the measurement object field of the MEASUREMENT CONTROL message.

For example, in figure 9Figure 43, since an offset is added to primary CCPCH 3, it is the dotted curve that is used to evaluate if an event occurs. Hence, this meansit results in that measurement reports from UE to UTRAN are triggered when primary CCPCH plus the corresponding offset, i.e. the dotted curve, leaves and enters the reporting range and when it gets better than primary CCPCH 1 (if these events have been ordered by UTRAN). This offset mechanism provides the network with an efficient tool to change the reporting of an individual primary CCPCH.

By applying a positive offset, as in Figure 43figure 9, the UE will send measurement reports as if the primary CCPCH is offset *x* dB better than what it really is. This could be useful if the operator knows that a specific cell is interesting to monitor more carefully, even though it is not so good for the moment. In the example in figure 9Figure 43, the operator might know by experience that in this area primary CCPCH 3 can become good very quicklyfast (e.g. due to street corners) and therefore that it is worthis good to reporting more intensively. Depending on the implemented handover evaluation algorithm, this may result in theat the cell with primary CCPCH 3 beingis included in the active set earlier than would have been the case without the positive offset.

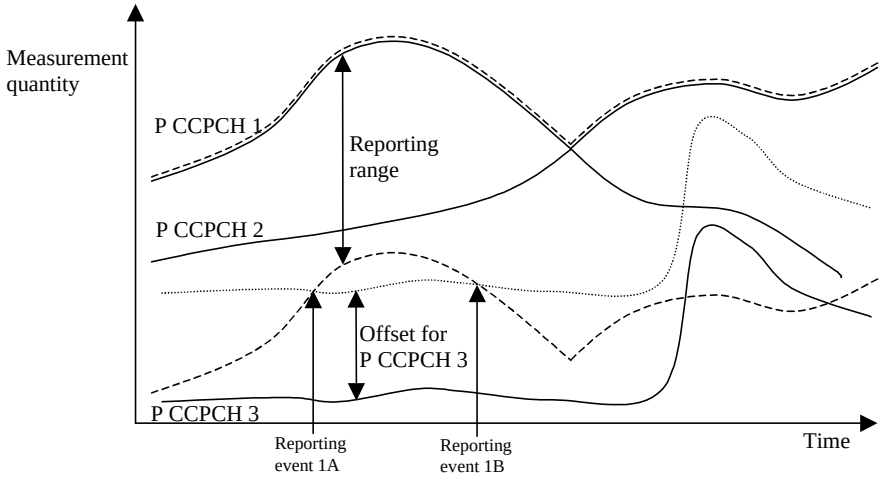



**Figure 9: Figure 43 A positive offset is applied to primary CCPCH 3 before event evaluation in the UE.**

Correspondingly, the operator can choose to apply a negative offset to a primary CCPCH. Then the reporting on that primary CCPCH is limited, and the corresponding cell may be, at least temporarily, excluded from the active set.

The cell individual offset can be seen as a tool to move the cell border. It is important to note that the offset is added before triggering events, i.e. the offset is added byin the UE before evaluating if a measurement report should be sent, as opposed to offsets that are applied in the network and used for the actual handover evaluation.

### 15.1.4.4 Forbid a Primary CCPCH to affect the reporting range

The reporting range affects the reporting events 1A and 1B presented above. The reporting range is defined relative to the best Primary CCPCH. However, there could be cases where it is good to forbid a specific Primary CCPCH to affect the reporting range. For example in Figure 44 the network has requested the UE to not let Primary CCPCH 3 affect the reporting range. This mechanism could be effective if the operator knows by experience that the quality of Primary CCPCH 3 is very unstable in a specific area and therefore should not affect the reporting of the other Primary CCPCHs.

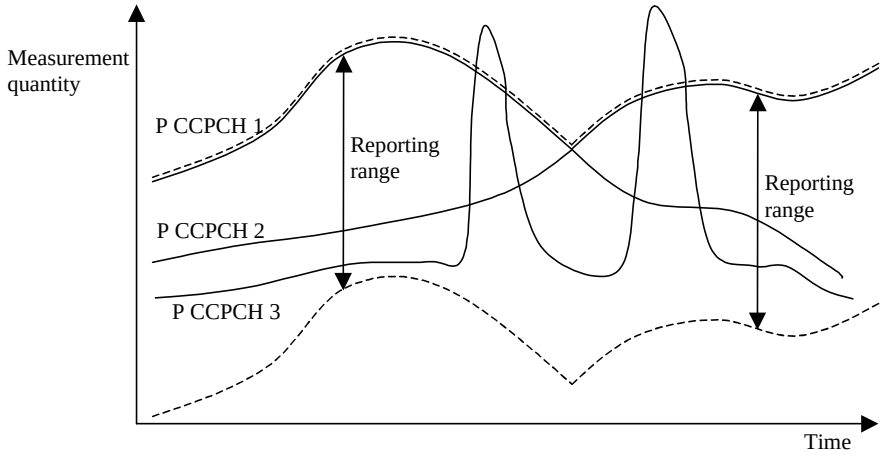



**Figure 44 Primary CCPCH 3 is forbidden to affect the reporting range.**

## 15.1.54 Report quantities

In the event-triggered measurement reports, mandatory information connected to the events is always reported. For instance, at the event "a primary CCPCH enters the reporting range" the corresponding report identifies the primary CCPCH that entered the range.

However, besides this mandatory information, UTRAN should be able to optionally require additional measurement information in the report to support the radio network functions in UTRAN. Furthermore, it will allow the UTRAN to use the UE as a general tool for radio network optimisation, if necessary.

Examples of report quantities that may be appended to the measurement reports are:
*[Note: This list is general and does also apply for reports of other measurement types than the intra-frequency type. The list is not final.]*

- Downlink transport channel block error rate
- Downlink transport channel bit error rate
- Downlink $E_c/I_0$ on primary CCPCH (e.g. used for initial DL power setting on new radio links.)
- "Time difference between the received primary CCPCH frame-timing from the target cell and the earliest received existing DPCH path". *[Note: This measurement is identified in 25.211 [2] (denoted $\mathbf{T_m}$ in chapter 7)]*
- UE transmit power
- *UE position (FFS)*
- *Downlink SIR (RSCP/ISCP) on the traffic channels after RAKE combining (FFS)*
- *Downlink SIR (RSCP/ISCP) on primary CCPCH (e.g. used for initial DL power setting on new radio links.)(FFS)*

# 15.2 Traffic Volume Measurements

## 15.2.1 Traffic Volume Measurement Quantity

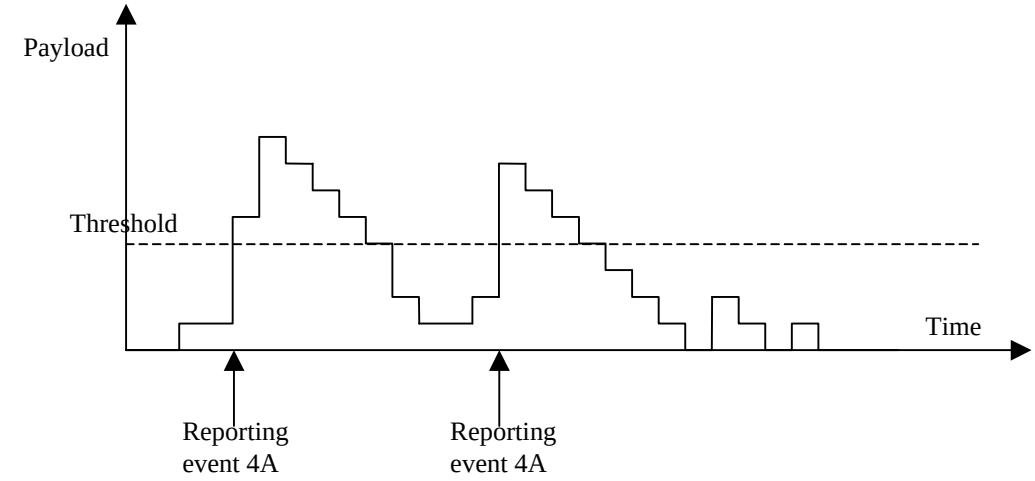
For traffic volume measurements in the UE only one quantity is measured. This quantity is RLC buffer payload in number of bytes. In order to support a large variation of bit rates and RLC buffer size capabilities, a non-linear scale should be used *[Note: details are FFS]*. Since, the expected traffic includes both new and retransmitted RLC payload units all these should be included in the payload measure. It should also be noted that traffic volume measurements are only applicable for acknowledged and unacknowledged mode.

According to what is stated in the Measurement Control message, the UE should support measuring of buffer payload for a specific RAB, RABs multiplexed onto the same Transport channel and the total UE buffer payload (the same as one transport channel for a UE that uses RACH).

## 15.2.2 Traffic Volume reporting events

Traffic volume can be reported in two different ways, periodical and event triggered. For periodical reporting the UE simply measures the number of bytes for the transport channel (i.e. the RLC buffers of the RABs multiplexed onto that transport channel) stated in the measurement control message and reports the traffic volume at the given time instants.
E~~For e~~vent triggered reporting is performed when~~, exceeding~~ a threshold is exceeded~~triggers the report~~.
The~~What~~ reporting quantities which~~that~~ should be included in the report is stated in the measurement control message. This could for example~~e.g.~~ be which RABs or RLC buffers to include when sending the payload to the network.

### 15.2.2.1 Reporting event 4 A: RLC buffer payload exceeds an absolute threshold




**~~Figure 1:~~ Figure 45 Event triggered report when RLC buffer payload exceeds a certain threshold.**

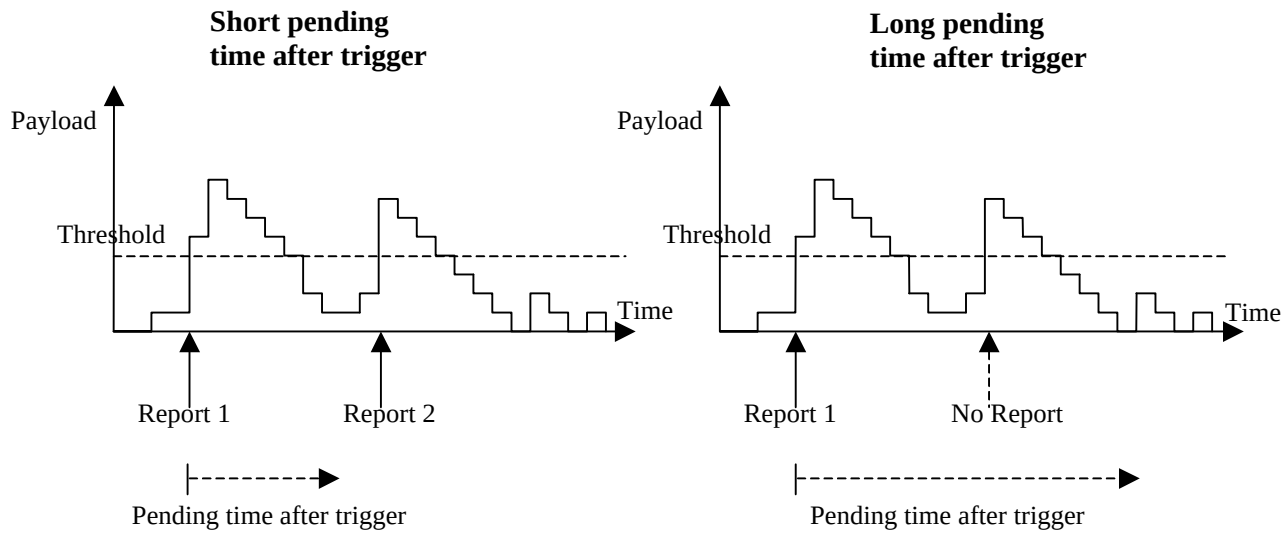
If the monitored payload exceeds an absolute threshold, this is an event that could trigger a report. The corresponding report contains at least which~~at~~ transport channel ~~that~~ triggered the report.

## 15.2.3 Traffic volume reporting mechanisms

Traffic volume measurement triggering could be associated with both a *time-to-trigger* and a *pending time after trigger*. The time-to-trigger is used to get time domain hysteresis, i.e. the condition must be fulfilled during the time-to-trigger time before a report is sent. Pending time after trigger is used to limit consecutive reports when one traffic volume measurement report already has been sent. This is described in detail below.

### 15.2.3.1 Pending time after trigger

This timer is started in the UE when a measurement report has been triggered. The UE is then ~~during this time period~~ forbidden to send any new measurement reports with the same measurement ID during this time period even when~~although~~ the triggering condition is fulfilled again. Instead the UE waits until the timer has suspended. If the payload ~~still~~ is still above the threshold when the timer has expired~~been suspended,~~ the UE sends a new measurement report. Otherwise it waits for a new triggering.




**~~Figure 2.~~ Figure 46 Pending time after trigger limits the amount of consecutive measurement reports.**

~~In~~ ~~Figure 2~~ Figure 46~~it is~~ shows~~n~~ that by increasing the pending time after trigger a triggered second event does not result in a measurement report.

# 15.3 UE internal measurements

## 15.3.1 UE internal measurement quantities

For UE internal measurements the following measurement quantities exist:

1. UE transmission (Tx) power
2. UE received signal strength power (RSSI)

## 15.3.2 UE internal measurement reporting events

In the Measurement reporting criteria field in the Measurement Control messages, the UTRAN notifies the UE of which events should trigger a measurement report. UE internal measurement reporting events that can trigger a report are given below. The reporting events are marked with vertical arrows in the figures below. All events can be combined with time-to-trigger. In that case, the measurement report is only sent if the condition for the event has been fulfilled for the time given by the time-to-trigger parameter

*[Note: The reporting events are numbered 6A, 6B, 6C,.. where 6 denotes that the event belongs to the type UE internal measurements.]*

### 15.3.2.1 Reporting event 6A: The UE Tx power becomes larger than an absolute threshold

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE transmission power becomes larger than a predefined threshold. The corresponding report identifies the threshold that was exceeded.

### 15.3.2.2 Reporting event 6B: The UE Tx power becomes less than an absolute threshold

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE transmission power becomes less than a predefined threshold. The corresponding report identifies the threshold that the UE Tx power went below.

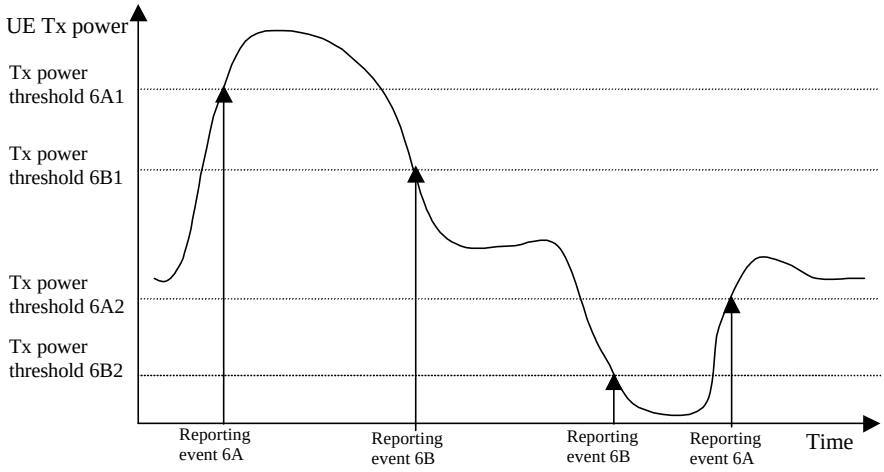



**Figure 47 Event-triggered measurement reports when the UE Tx power becomes larger or less than absolute thresholds.**

### 15.3.2.3 Reporting event 6C: The UE Tx power reaches its minimum value

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE Tx power reaches its minimum value.

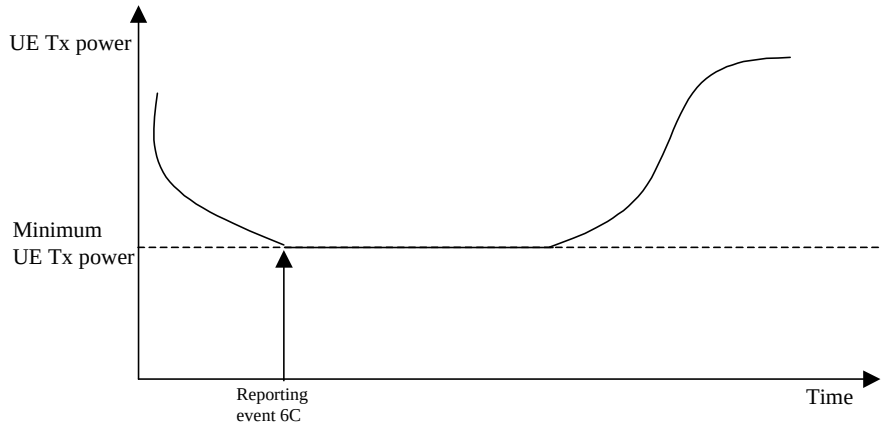



**Figure 48 Event-triggered measurement report when the UE Tx power reaches its minimum value.**

### 15.3.2.4 Reporting event 6D: The UE Tx power reaches its maximum value

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE Tx power reaches its maximum value.

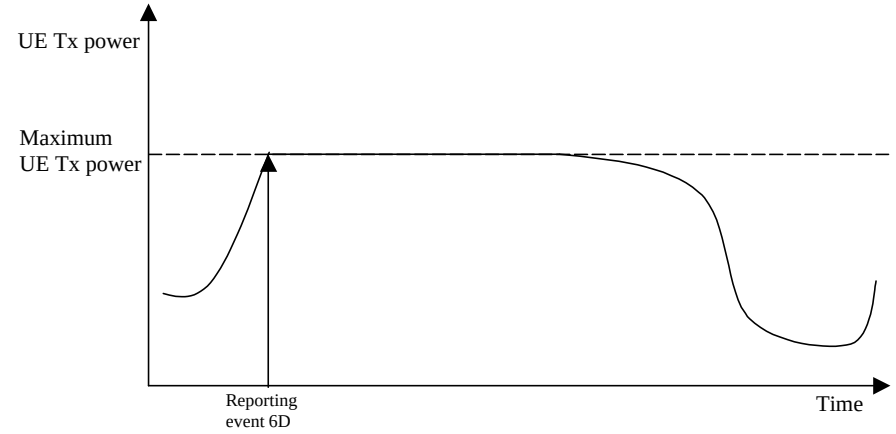



**Figure 49 Event-triggered report when the UE Tx power reaches its maximum value.**

### 15.3.2.5 Reporting event 6E: The UE RSSI reaches the UE's dynamic receiver range

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE RSSI reaches the UE's dynamic receiver range.

## 15.43 Dynamic Resource Allocation Control of Uplink DCH

The network uses this procedure to dynamically control the allocation of resources on an uplink DCH, this is achieved by sending transmission probability and maximum data rate information elements.

This procedure is initiated with a SYSTEM INFORMATION message from the NW RRC and applies to all UEs having uplink DCH's that are dynamically controlled by this procedure. Such uplink DCH's could be established through RAB establishment procedure, RAB reconfiguration procedure, RAB release procedure or Transport Channel Reconfiguration procedure by using a 'Dynamic Control' parameter to indicate that the DCH is controlled by the DRAC procedure.

This function is launched by UE upon reception of a SYSTEM INFORMATION message comprising DRAC parameters (ptr, Max. bit rate).

1. The UE randomly selects p [0,1].
2. The UE then checks its permission: if $p<p_{tr}$ the permission is granted for $T_{validity}$ frames, otherwise the UE waits for $T_{retry}$ frames before re-attempting access.
3. A new subset of TFCS is sent to MAC, according to the permission result and to maximum bit rate granted. This subset of TFCS shall only affect DCH that are controlled by this procedure.

Transmission time validity, Time duration before retry and Silent period duration before release are indicated to the UE together with the "Dynamic Control' parameter (i.e. at the establishment of a DCH controlled by this procedure) and may eventually be changed through RAB reconfiguration.

When the UE is in soft handover, the UE may have to listen to the CCCH system information of 1 or several cells in the Active Set in order to react to the most stringent parameters, e.g. the lowest product ptr*max bit rate. In case of conflict in the reception of multiple FACH, the UE shall listen to the FACH with a priority order corresponding to the rank of cells in its Active Set (i.e. the FACH of the best received cells should be listened to first).

Whether the support for DRAC function is dependent on the UE capability or UE service capability is FFS

# 16 Handling of unknown, unforeseen and erroneous protocol data

This section specifies procedures for the handling of unknown, unforeseen, and erroneous protocol data by the receiving entity. These procedures are called "error handling procedures".

# 17 SDL

This section describes the functionality of the protocol in descriptive SDL.

# 18 Appendices: Examples of operation

# 19 History

| Document history | | |
|---|---|---|
| **Date** | **Version** | **Comment** |
| January 1999 | 0.0.1 | Created following the first 3GPP WG2 meeting . Text from two documents were merged. These documents were:<br><br>ETSI SMG2 UMTS L23 EG document: 'Description of the RRC protocol, YY.31, v0.2.0, ETSI L23EG Tdoc 065/99, January 19, 1999.<br><br>and<br><br>TTC/ARIB document: 'Draft UE-UTRAN L3 RRC signalling protocol', Vol. 9, Ver 1.0.0, January 14, 1999, ETSI L23 EG Tdoc 010/99<br><br>The ETSI document was taken as the baseline document and change marks are given in v 0.0.1 of S2.31 with respect to the ETSI document. |
| March 1999 | 0.0.2 | Updated according to 3GPP template. There were no changes to S2.31 agreed at the January 1999 meeting |
| April 1999 | 0.1.0 | Updated to include new message and information element functional descriptions as described in TSGR2#3(99)220 (report of RRC email ad-hoc). New chapter headings 10-17 have been added and Annex 1 removed. Text updated to reflect new definitions for paging messages. |
| April 1999 | TS 25.331<br><br>V1.0.0 | Noted by TSG-RAN as TS 25.331V1.0.0 |
| May 1999 | V1.0.1 | Tables in Section 10 edited so that they read correctly when opened from WORD 6.0 |
| June 1999 | V1.1.0 | Edited following May 1999 RAN2meeting. Includes modifications to RRC procedures agreed in RRC procedures email ad-hoc (and mostly captured in Tdoc 376). Note that new procedures on RNTI re-allocation and RRC status added. Also includes a large number of modifications to RRC parameters and information elements most of which were captured in Tdoc 380. Updated to WORD 97. |
| July 1999 | V1.2.0 | Edited following the RAN2 meeting held in July 1999. Includes changes agreed in an email discussion, these changes were in the main captured in Tdoc 525. Also includes changes agreed at the RRC ad-hoc which was held during the meeting (See Tdoc 680). A number of other changes were also agreed - see meeting minutes. |

| | | |
|---|---|---|
| August 1999 | V1.2.1 | Minor editing performed prior to RAN2 meeting #6.<br>Some alignment between 25.303 and 25.331 performed. |

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