TSG-RAN Meeting #6
Nice, France, 13 – 15 December 1999

TSGRP#6(99)656

Title: **Agreed CRs of category "B" (New feature) to TS 25.331 v"Intermediate", 1st set**

Source: **TSG-RAN WG2**

Agenda item: **5.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Subject	Cat	Versio	Versio
R2-99h09	agreed	25.331	009	1	Inclusion of information elements for	B	interm	3.1.0
R2-99j70	agreed	25.331	010	2	Security mode control procedure	B	interm	3.1.0
R2-99k45	agreed	25.331	011	3	Updates of the system information	B	interm	3.1.0
R2-99k33	agreed	25.331	012	2	Inter-frequency measurements and	B	interm	3.1.0
R2-99k35	agreed	25.331	013	1	Inter-system measurements and	B	interm	3.1.0
R2-99h14	agreed	25.331	014	1	Additional measurements in RRC	B	interm	3.1.0
R2-99j78	agreed	25.331	015	3	Value range for Measurement	B	interm	3.1.0
R2-99k37	agreed	25.331	016	2	Message contents for inter system	B	interm	3.1.0
R2-99k99	agreed	25.331	034	1	Open loop power control for PRACH	B	interm	3.1.0
R2-99h37	agreed	25.331	040		Support for DS-41 Initial UE Identity	B	interm	3.1.0
R2-99k41	agreed	25.331	042	2	Integration of Cell Broadcast Service	B	interm	3.1.0
R2-99h25	agreed	25.331	045		Modification to the Transport Format	B	interm	3.1.0
R2-99h26	agreed	25.331	046		New Information elements and	B	interm	3.1.0
R2-99h29	agreed	25.331	049		Description of CN dependent IEs in	B	interm	3.1.0
R2-99j20	agreed	25.331	051	1	UTRAN response time to uplink	B	interm	3.1.0
R2-99j83	agreed	25.331	055	1	Information elements for cell	B	interm	3.1.0
R2-99j84	agreed	25.331	057	1	Introduction of a SCCH procedure	B	interm	3.1.0
R2-99i02	agreed	25.331	061		Support for DS-41 Paging UE	B	interm	3.1.0
R2-99k49	agreed	25.331	062	2	Support for cdma2000 Hard	B	interm	3.1.0
R2-99k42	agreed	25.331	063	1	Provide necessary signalling to	B	interm	3.1.0

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99h09)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25 331	CR	009r1	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-RAN#6 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: TSG-RAN WG2 **Date:** 5/11/99

Subject: Inclusion of information elements for integrity protection

Work item:

Category: *(only one category shall be marked with an X)*			**Release:**	
F	Correction		Phase 2	
A	Corresponds to a correction in an earlier release		Release 96	
B	Addition of feature	X	Release 97	
C	Functional modification of feature		Release 98	
D	Editorial modification		Release 99	X
			Release 00	

Reason for change: The integrity protection has been agreed to be an RRC function. This CR proposes necessary information elements for the integrity protection mechanism.

Clauses affected: 8.5.7.3.x (new chapter), 10

Other specs affected:			
Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.5.7.3 UE information elements

8.5.7.3.x Integrity protection mode info

If the IE “Integrity protection mode info” is present, the UE shall check the IE “Integrity protection mode command” as part of the IE “Integrity protection mode info”, and perform the following:

- If IE “Integrity protection mode command” has the value “start/restart”, the UE shall start or restart integrity protection, using the algorithm indicated by the IE “Integrity protection algorithm” (UIA [TS 33.102]) and use the IE “Integrity protection initialisation number” as the value of FRESH [TS 33.102] ”, both contained in the IE “Integrity protection mode info”. If a new integrity protection key has been received, the new key shall be used and the integrity protection HFN shall be set to 0.

- If IE “Integrity protection mode command” has the value “modify”, the UE shall start to use integrity protection, using the integrity protection algorithm (UIA [TS 33.102]) indicated by the IE “Integrity protection algorithm” contained of the IE “Integrity protection mode info”.

If the IE “Integrity protection mode info” is not present, the UE shall not change the integrity protection configuration.

10.1 Radio Resource Control messages

10.1.1 RRC Connection Mobility Messages

10.1.1.1 ACTIVE SET UPDATE (FDD only)

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Integrity protection mode info	O			
U-RNTI	O			New U-RNTI
Activation time	O			
Ciphering mode info	O			
CN information elements				
PLMN identity	O			(Note3)
CN related information		0 to <MaxNoCNdomains>		CN related information to be provided for each CN domain
CN domain identity	O			(Note3)
NAS system info	O			(Note3)
Phy CH information elements				
Maximum allowed UL TX power	O			
Radio link addition information		0 to <MaxAddRLcount>		Radio link addition information required for each RL to add
Primary CCPCH info	M			Note 1
SSDT cell identity	C - ifSSDT			
Downlink DPCH info	M			
Radio link removal information		0 to <MaxDelRLcount>		Radio link removal information required for each RL to remove
Primary CCPCH info	M			Note 1
Gated Transmission Control Info	O			FFS, Note 2
SSDT indicator	O			

Condition	Explanation
IfSSDT	This IE is only sent when SSDT is being used and a new radio link is added

Range bound	Explanation

MaxAddRLcount	Maximum number of radio links which can be added
MaxDelRLcount	Maximum number of radio links which can be removed/deleted

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

*Note 2: The activation time should be present when the Gated Transmission control info is present in this message.*Note3: Necessity of PLMN is FFS and for CN domain identity and NAS system information, the confirmation in SA WG2 is needed.

10.1.1.2 ACTIVE SET UPDATE COMPLETE (FDD only)

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	**Presence**	**Range**	**IE type and reference**	**Semantics description**
Message Type	M			
UE information elements				
Integrity check info	O			
Phy CH information elements				
SSDT indicator	O			

10.1.1.3 ACTIVE SET UPDATE FAILURE (FDD only)

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Failure cause	M			

10.1.1.4 CELL UPDATE

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

RLC-SAP: TM

Logical channel: CCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
U-RNTI	M			
Cell update cause	M			
AM_RLC error indication	O			Indicates AM_RLC unrecoverable error occurred on c-plane in the UE
Measurement information elements				
Measurement identity number				Intra-frequency measurement related report
Measured results				

10.1.1.5 CELL UPDATE CONFIRM

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

RLC-SAP: UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			

Integrity protection mode info	O			
New U-RNTI	O			
New C-RNTI	O			
RLC re-configuration indicator	C-AM_RLC_recon			
UTRAN DRX cycle length	O			
DRX Indicator	O			
Ciphering mode info	O			
UTRAN mobility information elements				
URA identifier	O			
CN information elements				
PLMN identity	O			(Note1,2)
CN related information		0 to <MaxNoCNdomains>		CN related information to be provided for each CN domain
CN domain identity	O			(Note1,2)
NAS system info	O			(Note1,2)
Physical CH information elements (FFS Note 5)				
Frequency info	O (FFS)			
Uplink radio resources				
Uplink DPCH power control info	O (FFS)			
CHOICE channel requirement				
Uplink DPCH info	O (FFS)			
PRACH info (for RACH)	O (FFS)			
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)	O (FFS)			
Downlink radio resources				
DL information per radio link		0 to <maxNoRLs>		
Primary CCPCH info	O (FFS)			
Downlink DPCH info	O (FFS)			
Secondary CCPCH info	O (FFS)			
				Note 3
CHOICE *mode*				
FDD				
SSDT indicator	O (FFS)			
CPCH SET Info	O (FFS)			UL/DL radio resource for CPCH control (Note4)
Gated Transmission Control info	O (FFS)			
Default DPCH Offset Value	O (FFS)			

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info (for RACH)	
PRACH info (for FAUSCH)	

Range Bound	Explanation
MaxNoRLs	Maximum number of radio links
MaxNoCN domains	Maximum number of CN domains

Condition	Explanation
AM_RLC_recon	This IE is only sent when the UTRAN requests AM RLC re-configuration

[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.]

Note 3: It is assumed that the DL timeslot configuration is the same for all radio links, whether or not macro-diversity is supported for TDD.

Note 4: How to map UL and DL radio resource in the message is FFS.

Note 5: The inclusion of any physical channel information elements requires further study

10.1.1.6 HANDOVER COMMAND

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Integrity protection mode info	O			
New U-RNTI	O			

CHOICE *mode*				
TDD				
New C-RNTI				
Ciphering mode info	O			
CN information elements	O			
PLMN identity	O			(Note2)
CN related information		0 to <MaxNoCNdomains>		CN related information to be provided for each CN domain
CN domain identity	O			(Note2)
NAS system info	O			(Note2)
Phy CH information elements				
Frequency info	M			
Maximum allowed UL TX power	O			
Uplink radio resources				
UL DPCH power control info	M			
UL DPCH info	M			
Downlink radio resources				
Link specific information		1 to <MaxHoRLcount>		Provide information for each DL radio link. (Note 1)
Primary CCPCH info	M			
DL DPCH info	M			
CHOICE *mode*				
FDD				
SSDT indicator	O			
SSDT Cell ID	C ifSSDT			FFS
TDD				
Uplink Timing Advance	O			

Condition	**Explanation**
IfSSDT	This IE is only sent when SSDT is used

Range Bound	**Explanation**
MaxHoRLcount	Maximum number of DL radio links which can be established on handover

Note1: The possibility to request the establishment of several radio links simultaneously with this message is FFS.

Note2: Necessity of PLMN is FFS and for CN domain identity and NAS system information, the confirmation in SA WG2 is needed.

10.1.1.7 HANDOVER COMPLETE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Integrity protection hyper frame number	O			Included at inter-system handover.
Phy CH information elements				
CHOICE *mode*				
TDD				
SSDT indicator	O			

10.1.1.8 HANDOVER FAILURE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Failure cause	M			

10.1.1.9 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: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Activation time	O			
Other information Elements				
Inter-System message	M			

10.1.1.10 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: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Inter-System handover failure cause	O			FFS
Other Information Elements				
Inter-System message	O			

10.1.1.11 URA UPDATE

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

RLC-SAP: TM

Logical channel: CCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
U-RNTI	M			
URA update cause	M			

10.1.1.12 URA UPDATE CONFIRM

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

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Integrity protection mode info	O			
U-RNTI	C-CCCH			
New U-RNTI	O			
New C-RNTI	O			
UTRAN DRX cycle length	O			
DRX Indicator	O			
Ciphering mode info	O			
UTRAN mobility information elements				
URA identifier	O			
CN information elements				
PLMN identity	O			(Note1,2)
CN related information		0 to <MaxNoCNdomains>		CN related information to be provided for each CN domain
CN domain identity	O			(Note1,2)
NAS system info	O			(Note1,2)

Range Bound	Explanation
MaxNoCN domains	Maximum number of CN domains

Condition	Explanation
CCCH	This IE is only sent when CCCH is used

[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.]

10.1.1.13 RNTI REALLOCATION

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Integrity protection mode info	O			
New U-RNTI	O			
New C-RNTI	O			
Ciphering mode info	O			
CN information elements				
PLMN identity	O			(Note1,2)
CN related information		0 to <MaxNoCNdomains>		CN related information to be provided for each CN domain
CN domain identity	O			(Note1,2)
NAS system info	O			(Note1,2)

Range Bound	Explanation
MaxNoCN domains	Maximum number of CN domains

[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.]

10.1.1.14 RNTI REALLOCATION COMPLETE

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

RLC-SAP: AMt.b.d.

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type				
UE information elements				
Integrity check info	O			

10.1.2 Measurement Messages

10.1.2.1 MEASUREMENT CONTROL

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Measurement Information elements				
Measurement Identity Number	M			
Measurement Command	M			
Measurement Type	O			
Measurement Reporting Mode	O			
CHOICE Measurement				
Intra-frequency				
Intra-frequency cell info				Measurement object
Intra-frequency measurement quantity	C event trigger			
Intra-frequency measurement reporting quantity	O			Note 1
CHOICE report criteria				
Intra-frequency measurement reporting criteria				
Periodical reporting				
Inter-frequency				
Inter-frequency cell info				Measurement object
Inter-frequency measurement quantity	C event trigger			
Inter-frequency measurement reporting quantity	O			Note 1
Inter-frequency set Update				
CHOICE report criteria				
Intra-frequency measurement reporting criteria				
Inter-frequency measurement reporting criteria				
Periodical reporting				
Inter-system				
Inter-system cell info				Measurement object
Inter-system measurement quantity	C event trigger			
Inter-system measurement reporting quantity	O			Note 1
CHOICE report criteria				
Inter-system measurement reporting criteria				
Periodical reporting				
Traffic Volume				
Traffic volume measurement Object				
Traffic volume measurement quantity	C event trigger			
Traffic volume measurement reporting quantity	O			Note 1
CHOICE report criteria				
Traffic volume measurement reporting criteria				
Periodical reporting				
Quality				
Quality measurement Object				
Quality measurement quantity	C event trigger			
Quality measurement reporting quantity	O			Note 1

CHOICE report criteria				
Quality measurement reporting criteria				
Periodical reporting				
UE internal				
UE internal measurement quantity	C event trigger			
UE internal measurement reporting quantity	O			Note 1
CHOICE report criteria				
UE internal measurement reporting criteria				
Periodical reporting				

Condition	**Explanation**
event trigger	This element is only included in the message which is sent in event trigger reporting mode.

CHOICE *Measurement*	**Condition under which the given *Measurement* is chosen**
intra-frequency	if measurement type=Intra-frequency measurement
inter-frequency	if measurement type=Inter-frequency measurement
inter-system	if measurement type=Intra-system measurement
traffic volume	if measurement type=traffic volume measurement
Quality	if measurement type=Quality measurement
UE internal	if measurement type=UE internal measurement
CHOICE *reporting criteria*	**Condition under which the given *reporting criteria* is chosen**
******* measurement reporting criteria	Chosen when event triggering is required
periodical reporting	Chosen when periodical reporting is required

Note 1: It is FFS whether it is necessary to separate the reporting quantity for each type.

Note 2: The network may order the UE to report other measurements when UE internal measurements are reported

10.1.2.2 MEASUREMENT CONTROL FAILURE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Failure cause	M			

10.1.2.3 MEASUREMENT REPORT

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Measurement Information Elements				
Measurement report information		1 to <maxMeas RepCount>		Send Measurement Report information for each measurement report in the message (Note 1)
Measurement identity number	M			
Measured Results	C MR required			
CHOICE event result	C event trigger			Note 1,2
Intra-frequency measurement event results				
Inter-frequency measurement event results				
Inter-system measurement event results				
Traffic volume measurement event results				
Quality measurement event results				

Condition	Explanation
event trigger	This element is only included in the message which is sent in event trigger reporting mode.
MR required	This information element is included by the sender only if indicated optionally by Reporting Quantity in

	Measurement Control

Range Bound	**Explanation**
MaxMeasRepCount	Maximum number of Measurement reports in a message

CHOICE *event result*	**Condition under which the given *event result* is chosen**
intra-frequency measurement event results	
inter-frequency measurement event results	
inter-system measurement event results	
traffic volume measurement event results	
Quality measurement event results	

Note 1: Whether it is possible to send multiple measurement results that are identified by different measurement identity numbers in the same Measurement Report is FFS. An alternative solution is to allowt 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.

10.1.3.2 PAGING TYPE 2

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
CN Information elements				
CN domain identity	M			
Paging Record Type Identifier	M		Enumerated (IMSI, TMSI/ P-TMSI)	
UE Information elements				
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: UM

Logical channel: CCCH, DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
New U-RNTI	O			
New C-RNTI	O			
Activation time	O			
CN information elements				
PLMN identity	O			(Note1)
CN related information		0 to <MaxNoCNdomains>		CN related information to be provided for each CN domain
CN domain identity	O			(Note1)
NAS system info	O			(Note1)

RB information elements				
RB information		0 to <MaxRBcount>		RB information is sent for each RB affected by this message
RB identity	M			
RLC info	O			FFS
RB multiplexing info	M			
Transport Channel Information Elements				
TFCS	O			For uplink TFCSs
TFCS	O			For downlink TFCSs
CHOICE *mode*				
TDD				
TFCS Identity	O			Uplink TFCS
TFCS Identity	O			Downlink TFCS
TFC subset	O			For TFCSs in uplink
Uplink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
DRAC information	C DRAC	1 to <MaxReconAddTrCH>		
Dynamic Control				
Transmission time validity				
Time duration before retry				
Silent period duration before release				
Downlink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
PhyCH information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information				
CHOICE channel requirement	O			
Uplink DPDCH info				
PRACH info				
Downlink radio resource information				
Downlink information		0 to <MaxRlcount>		Send downlink information for each radio link to be set-up
Primary CCPCH info				
Downlink DPDCH info				
Secondary CCPCH info				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS
SSDT Cell ID	C ifSSDT			FFS
CPCH SET info	O			UL/DL radio resource for

				CPCH control (Note3)
Gated Transmission Control info	O			FFS
Default DPCH Offset Value	O			
TDD				
Uplink Timing Advance	O			

[Note1: Necessity of PLMN is FFS and for CN domain identity and NAS system information, the confirmation in SA WG2 is needed.]

[Note 3: How to map UL and DL radio resource in the message is FFS.]

Condition	**Explanation**
DRAC	These information elements are only sent for transport channels which use the DRAC procedure
IfSSDT	This IE is sent only when SSDT is to be used

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info	

Range Bound	**Explanation**
MaxNoCN domains	Maximum number of CN domains

MaxRBcount	Maximum number of RBs to be reconfigured
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconAddTrCH	Maximum number of transport channels to add and reconfigure
MaxRLcount	Maximum number of radio links

10.1.4.2 RRC CONNECTION RE-ESTABLISHMENT COMPLETE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			

10.1.4.3 RRC CONNECTION RE-ESTABLISHMENT REQUEST

<Functional description of this message to be included here>

RLC-SAP: TM

Logical channel: CCCH

Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
U-RNTI	M			
Measurement information elements				
Measurement information		1 to <MeasRep Count>		Send Measurement information for each measurement report in the message
Measurement identity number	M			Refers to system information. Note 1
Measured results	M			

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

Range Bound	**Explanation**
MeasRepCount	Number of measurement reports in the message

10.1.4.4 RRC CONNECTION RELEASE

<Functional description of this message to be included here>

RLC-SAP: UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	**Presence**	**Range**	**IE type and reference**	**Semantics description**
Message Type	M			
UE information elements				
Integrity check info	O			
Release cause	M			
Number of RRC Message Transmissions	M			

10.1.4.5 RRC CONNECTION RELEASE COMPLETE

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	**Presence**	**Range**	**IE type and reference**	**Semantics description**
Message Type	M			
UE information elements				
Integrity check info	O			

10.1.4.8 RRC CONNECTION SETUP COMPLETE

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Integrity protection hyper frame number	M			
Ciphering hyperframe number	M			
UE radio capability	M			
Phy CH information elements				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS

10.1.5 Radio 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: AM or UM

Logical channel: DCCH

Direction: UTRAN $\rightarrow$ UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE Information elements				
Integrity check info	O			
Activation time	O			
New C-RNTI	C - RACH/FACH		C-RNTI	
UTRAN DRX cycle length	O			
DRX Indicator	O			
Physical Channel information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information				
CHOICE channel requirement	O			
Uplink DPCH info				
PRACH Info (for RACH)				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
Downlink radio resource information				
Downlink DPCH power control info	O			
CHOICE *mode*				
FDD				
Downlink DPCH compressed mode info	O			
Downlink information		0 to <Max RLcount>		Send downlink information for each radio link
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				For FACH
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS
SSDT Cell ID	C ifSSDT			FFS
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
Default DPCH Offset Value	O			
TDD				
Uplink Timing Advance	O			

Condition	Explanation
IfSSDT	This IE is only sent when SSDT is used and when a

	new DCH is being activated
RACH/FACH	This information element is only included in the sent message when using RACH/FACH

Range Bound	**Explanation**
MaxRLcount	Maximum number of radio links to be set up

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info (for FAUSCH)	
PRACH info (for RACH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

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: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	**Presence**	**Range**	**IE type and reference**	**Semantics description**
Message Type	M			
UE information elements				
Integrity check info	O			
Phy CH information elements				
CHOICE *mode*				
FDD				
SSDT indicator	O			Necessity is FFS

10.1.5.3 PHYSICAL CHANNEL RECONFIGURATION FAILURE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Failure cause	M			

10.1.5.4 RADIO BEARER RECONFIGURATION

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

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE Information elements				
Integrity check info	O			
Activation time	O			
New C-RNTI	C - RACH/FACH			
UTRAN DRX cycle length	O			
DRX Indicator	O			
RB information elements				
RB information		0 to <MaxRBcount>		RB information is sent for each RB affected by this message
RB identity	M			
RLC info	O			FFS
RB mapping info	O			
RB suspend/resume	O			Not applicable to the signalling bearer.
Transport Channel Information Elements				
TFCS	O			for uplink TFCS
TFCS	O			for downlink TFCS
CHOICE *mode*				
TDD				
TFCS Identity	O			Uplink TFCS
TFCS Identity	O			Downlink TFCS
TFC subset	O			for TFCSs in uplink
Uplink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
DRAC information	C DRAC	1 to <MaxReconAddTrCH>		
Dynamic Control				
Transmission time validity				
Time duration before retry				
Silent period duration before release				
Downlink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
Physical Channel information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information	O			
CHOICE channel	O			

requirement				
Uplink DPCH info				
PRACH info (for RACH)				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
Downlink radio resource information				
Downlink DPCH power control info	O			
Downlink DPCH compressed mode info	O			
Downlink information		0 to <Max RLcount>		Send downlink information for each radio link
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
Gated Transmission Control info	O			FFS, Note 3
Default DPCH Offset Value	O			
TDD				
Uplink Timing Advance	O			

Condition	**Explanation**
RACH/FACH	This information element is only sent when using RACH/FACH
DRAC	These information elements are only sent for transport channels which use the DRAC procedure

Range Bound	**Explanation**
MaxRLcount	Maximum number of radio links
MaxRBcount	Maximum number of RBs to be reconfigured
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconAddTrCH	Maximum number of transport channels to add and reconfigure

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info (for RACH)	

PRACH info (for FAUSCH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

Note 3: The activation time should be present when the Gated Transmission control info is present in this message.

10.1.5.5 RADIO BEARER RECONFIGURATION COMPLETE

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Phy CH information elements				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS

10.1.5.6 RADIO BEARER RECONFIGURATION FAILURE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Failure cause	M			

10.1.5.7 RADIO BEARER RELEASE

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE Information elements				
Integrity check info	O			
Activation time	O			
New C-RNTI	C - RACH/FACH		C-RNTI	
UTRAN DRX cycle length	O			
DRX Indicator	O			
RB information elements				
RB identity		1 to <MaxRelRBcount>		
RB identity		0 to <MaxOtherRBcount>		
RB mapping info	O			
Transport Channel Information Elements				
TFCS	O			for uplink TFCS
TFCS	O			for downlink TFCS
CHOICE *mode*				
TDD				
TFCS Identity	O			Uplink TFCS
TFCS Identity	O			Downlink TFCS
TFC subset	O			for DCHs in uplink
Uplink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddFFSTrCH>		
Transport channel identity	M			
TFS	M			
DRAC information	C DRAC	1 to <MaxReconAddFFSTrCH>		
Dynamic Control				
Transmission time validity				
Time duration before retry				
Silent period duration before release				
Downlink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		Editor : this limit should probably also be MaxReconAddFFSTrCH
Transport channel identity	M			
TFS	M			
Physical Channel information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information	O			
CHOICE *mode*				
FDD				

Gated Transmission Control info	O, FFS			Note 3
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
TDD				
Uplink Timing Advance	O			
CHOICE channel requirement	O			
Uplink DPCH info				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
PRACH info (for RACH)				
Downlink radio resource information				
Downlink information		0 to <Max RLcount>		Send downlink information for each radio link to be set-up
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				

Condition	**Explanation**
RACH/FACH	This information element is only sent when using RACH/FACH
DRAC	These information elements are only sent for transport channels which use the DRAC procedure

Range Bound	**Explanation**
MaxRLcount	Maximum number of radio links
MaxDelRBcount	Maximum number of RBs to be released/deleted
MaxOtherRBcount	Maximum number of Other RBs (ie RB's not being released) affected by the procedure
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconAddFFSTrCH	Maximum number of transport channels to add (FFS) and reconfigure

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	

PRACH Info (for RACH)	
PRACH info (for FAUSCH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

Note 3: The activation time should be present when the Gated Transmission control info is present in this message.

10.1.5.8 RADIO BEARER RELEASE COMPLETE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			

10.1.5.9 RADIO BEARER RELEASE FAILURE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Failure cause	M			

10.1.5.10 RADIO BEARER SETUP

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
CN information elements				
NAS binding info	M			
CN domain identity				
UE Information elements				
Activation time	O			
New C-RNTI	C – RACH/FACH		C-RNTI	
UTRAN DRX cycle length	O			
DRX Indicator	O			
RB information elements				
Information for new RBs		1 to <MaxNewRBcount>		
RB identity	M			
RLC info	M			
RB mapping info	M			
Information for other RB's affected by this message		0 to <MaxOtherRBcount>		
RB identity	M			
RB mapping info	M			
Transport Channel Information Elements				
TFCS	O			for uplink TFCS
TFCS	O			for downlink TFCS
CHOICE *mode*				
TDD				
TFCS Identity	O			Uplink TFCS
TFCS Identity	O			Downlink TFCS
TFC subset	O			for DCHs in uplink
Uplink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		editor should this be FFS also?
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
DRAC information	C DRAC	1 to <MaxReconAddTrCH>		
Dynamic Control				
Transmission time validity				
Time duration before retry				
Silent period duration before release				
Downlink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		FFS
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
Physical Channel information elements				

Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information	O			
CHOICE *mode*				
FDD				
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
CHOICE channel requirement	O			
Uplink DPCH info				
PRACH Info (for RACH)				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
Downlink radio resource information				
Downlink DPCH power control info	O			
CHOICE *mode*				
FDD				
Downlink DPCH compressed mode info	O			
Downlink information		0 to <Max RLcount>		Send downlink information for each radio link
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS
SSDT Cell ID	C ifSSDT			FFS
Gated Transmission Control info	O			FFS
Default DPCH Offset Value	O			
TDD				
Uplink Timing Advance	O			

Condition	**Explanation**
RACH/FACH	This information element is only sent when using RACH/FACH
IfSSDT	This IE is only sent when SSDT is used and when a new DCH is being activated

Range Bound	**Explanation**

MaxRLcount	Maximum number of radio links
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconAddcount	Maximum number of Transport CHannels reconfigured or added
MaxNewRBcount	Maximum number of RBs that could be setup with this message
MaxOtherRBcount	Maximum number of Other RBs (ie RB's not being released) affected by the procedure

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info (for FAUSCH)	
PRACH info (for RACH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

Note 3: The activation time should be present when the Gated Transmission control info is present in this message.

10.1.5.11 RADIO BEARER SETUP COMPLETE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	**Presence**	**Range**	**IE type and reference**	**Semantics description**
Message Type	M			
UE information elements				
Integrity check info	O			
Phy CH information elements				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS

10.1.5.12 RADIO BEARER SETUP FAILURE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Failure cause	M			

10.1.5.13 TRANSPORT CHANNEL RECONFIGURATION

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

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE Information elements				
Integrity check info	O			
Activation time	O			
New C-RNTI	C - RACH/FACH		C-RNTI	
UTRAN DRX cycle length	O			
DRX Indicator	O			
Transport Channel Information Elements				
TFCS	O			for uplink TFCS
TFCS	O			for downlink TFCS
CHOICE *mode*				
TDD				
TFCS Identity	O			Uplink TFCS
TFCS Identity	O			Downlink TFCS
TFC subset	O			for DCHs in uplink
Uplink transport channels				
Reconfigured TrCH information		0 to <MaxReconTrCH>		
Transport channel identity				
TFS				
DRAC information	C DRAC	1 to <MaxReconTrCHDRAC>		
Dynamic Control				
Transmission time validity				
Time duration before retry				
Silent period duration before release				
Downlink transport channels				
Reconfigured TrCH information		0 to <MaxReconTrCH>		
Transport channel identity				
TFS				
Physical Channel information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information				
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
CHOICE channel requirement	O			
Uplink DPCH info				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
PRACH info (for RACH)				
	O			
Downlink radio resource information				
Downlink DPCH power control info	O			
CHOICE *mode*				
FDD				

Downlink DPCH compressed mode info	O			
Downlink information		0 to <Max RLcount>		Send downlink information for each radio link
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS
SSDT Cell ID	C ifSSDT			FFS
Gated Transmission Control info	O			FFS, Note 3
Default DPCH Offset Value	O			
TDD				
Uplink Timing Advance	O			

Condition	**Explanation**
IfSSDT	This IE is only sent when SSDT is used and when a new DCH is being activated
RACH/FACH	This information element is only sent when using RACH/FACH

Range Bound	**Explanation**
MaxRLcount	Maximum number of radio links to be set up
MaxReconcount	Maximum number of Transport CHannels reconfigured
MaxReconTrCHDRAC	Maximum number of Transport CHannels which are controlled by DRAC and which are reconfigured

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info (for RACH)	
PRACH info (for FAUSCH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

Note 3: The activation time should be present when the Gated Transmission control info is present in this message.

10.1.5.14 TRANSPORT CHANNEL RECONFIGURATION COMPLETE

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Phy CH information elements				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS

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

10.1.5.15 TRANSPORT CHANNEL RECONFIGURATION FAILURE

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
Failure cause	M			

10.1.5.16 TRANSPORT FORMAT COMBINATION CONTROL

<Functional description of this message to be included here>

RLC-SAP: TM, AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	C-notTM			
UE information elements				
Integrity check info	O			
TrCH information elements				
TFC subset	M			For uplink TFCS

Condition	Explanation
NotTM	The message type is not included when transmitting the message on the transparent mode signalling DCCH

10.1.5.17 DOWNLINK OUTER LOOP CONTROL

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
PhyCH information elements				
Downlink Outer Loop Control	M			Indicates whether the UE is allowed or not to increase its Eb/No target value above its current value

10.1.5.18 PHYSICAL SHARED CHANNEL ALLOCATION (TDD only)

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

RLC-SAP: TM or AM

Logical channel: SHCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE Information elements				
Integrity check info	O			
C-RNTI	M			
PUSCH allocation pending	O			
Transport Channel information elements				
TFCS identity	O			
Physical Channel information elements				
PUSCH power control info	O			
Uplink timing advance info	O			
PUSCH info	O			
PDSCH info	O			

10.1.5.19 PUSCH CAPACITY REQUEST (TDD only)

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

RLC-SAP: t.b.d.

Logical channel: SHCCH

Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
C-RNTI	M			
Measurement information elements				
Traffic amount information		1 to <RABCount>		Send traffic amount information for each Radio Access Bearer in the message
RB ID	M			
RLC buffer payload	M			
Measurement information		0 to <MeasRepCount>		Send Measurement information for each measurement report in the message
Measurement identity number	M			Refers to system information
Measured results	M			

Range Bound	Explanation
RABCount	Number of traffic amount informations in the message
MeasRepCoun	Number of measurement reports in the message

10.1.7 Other Messages

10.1.7.1 UE CAPABILITY INFORMATION

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
CN information elements				
CN domain identifier	M			
NAS message	M			Includes the CN capability information
UE information elements				
UE radio capability	M			
Other information elements				
Inter-system message	O			Includes inter-system classmark

10.1.7.2 UE CAPABILITY INFORMATION CONFIRM

<Functional description of this message to be included here>

RLC-SAP: UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			

10.1.7.3 UE CAPABILITY ENQUIRY

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

RLC-SAP: t.b.d.

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
System	M		Enumerated (GSM,..)	

10.1.7.4 DIRECT TRANSFER

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: both

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
CN information elements				
CN domain identity	M			
NAS message	M			
Measurement information elements				
Measured results	O			

10.1.7.5 SECURITY MODE ~~CONTROL~~ COMMAND

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN to UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
CN Information elements				
CN domain identity	M			Indicates which cipher and integrity protection keys are ~~key is~~ ~~A~~applicable
UE information elements				
Ciphering mode info	O			Only present if ciphering shall be controlled

Range Bound	Explanation
MaxReconRBs	For each radio bearer that is reconfigured

10.1.7.6 SECURITY MODE ~~CONTROL~~ COMPLETE

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Integrity check info	O			
RB Information elements				
Radio bearer identity		1 to <maxReconRBs>		Radio bearer identity 0 indicates the signalling link and is always present
UE information elements				
Downlink activation Time	O		Activation time	

Range Bound	Explanation
MaxReconRBs	For each radio bearer that is reconfigured

10.2.3 UE Information elements

10.2.3.x Integrity protection hyper frame number

This hyper frame number (HFN) is used to initialise the integrity protection algorithm.

For integrity protection, the HFN is concatenated with the sequence number in the IE "Integrity check info" to form the parameter COUNT-I in the integrity protection algorithm. HFN is the most significant bits of COUNT-I. When the COUNT-I is initialized: COUNT-I = HFN (the LSB part of COUNT-I is set to zero).

Information Element/Group name	**Presence**	**Range**	**IE type and reference**	**Semantics description**
Integrity protection HFN	M			Start value for uplink and downlink COUNT-I

10.2.3.x Integrity check info

The Integrity check info contains the RRC message sequence number needed in the calculation of XMAC-I [TS 33.102] and the calculated MAC-I.

Information Element/Group name	**Presence**	**Range**	**IE type and reference**	**Semantics description**
Message authentication code	M		Integer ($0..2^{32}-1$)	MAC-I [TS 33.102]
RRC Message sequence number	M			The local hyper frame number (HFN) is concatenated with the RRC message sequence number to form the input parameter COUNT-I for the integrity protection algorithm.

10.2.3.y Integrity protection mode info

Information Element/Group name	**Presence**	**Range**	**IE type and reference**	**Semantics description**
Integrity protection mode command	M		Enumerated(start/restart, modify)	
Integrity protection algorithm	M			UIA [TS 33.102]
Integrity protection initialisation number	C-*start/restart*		Integer ($0..2^{32}-1$)	FRESH [TS 33.102]

Condition	**Explanation**
Start/restart	The IE is present only when the IE "Integrity protection mode command" has the value "start/restart".

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99j70)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	010r2	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 1/12/1999

Subject: Security mode control procedure

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

- The security model control procedure is updated with the necessary parts to support also the control of integrity protection and new message contents.
- In TS 33.102 it says that HFN shall be set to zero if new keys shall be used for ciphering. This is missing and it needs to be added.
- A new synchronisation method is added for radio bearers with UM or AM RLC and the approach with CFN is proposed to remain for the RLC-TM radio bearers.

Clauses affected: 8.1.10, 8.5.7.3.8, 10.1.7.5, 10.1.7.6, 10.2.3.34, 10.2.4.x (new)

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.1.10 Security mode control

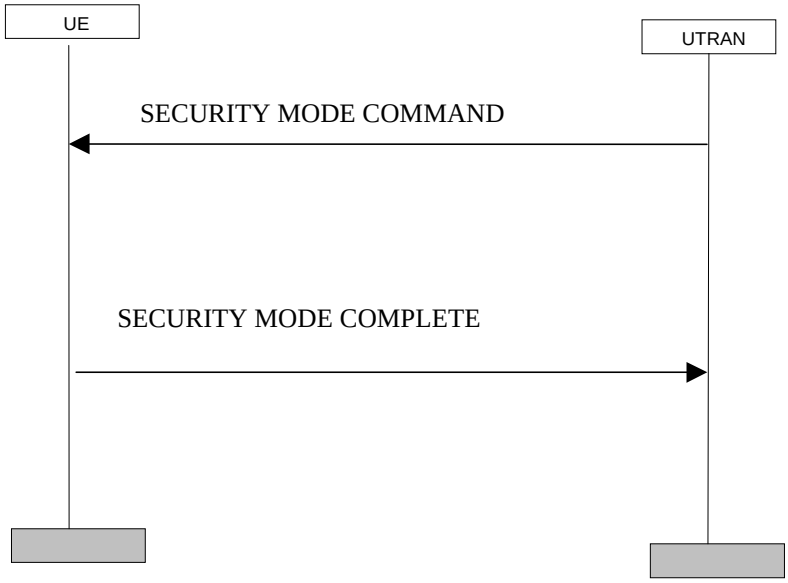


Figure 1*) Security mode control procedure*

8.1.10.1 General

The purpose of this procedure is to trigger the start of ciphering or to command the change of the cipher key, both for the signalling link and for any of the radio bearers.

It is also used to start integrity protection or to restart integrity protection for uplink and downlink signalling.

8.1.10.2 Initiation

Prior to UTRAN initiates a security mode control procedure for control of ciphering and if the UE has radio bearers using RLC-AM or RLC-UM, UTRAN suspends all radio bearers belonging to the CN domain for which the security mode control procedure is initiated. Also the signalling radio bearers, except the one used for RRC messages using RLC-AM, used by the security mode procedure itself, are suspended. For each suspended radio bearer, UTRAN includes the current RLC send sequence number in the IE "Radio bearer downlink activation time info" in the IE "Ciphering mode info".

Further, if the UE has radio bearers using RLC-TM, UTRAN sets the IE "Activation time for DPCH" in the IE "Ciphering mode info" to the CFN at which the new ciphering configuration shall become active.

To start or reconfigure ciphering and/or integrity protection, ~~T~~the UTRAN sends a SECURITY MODE COMMAND message on the downlink DCCH in AM RLC~~, using the old ciphering configuration~~.

When the transmission of the SECURITY MODE COMMAND has been confirmed by RLC, and if the security mode control procedure is used to control ciphering, UTRAN starts to cipher the messages on the signalling radio bearer used for RRC messages using RLC-AM, with the new ciphering configuration.

~~For the signalling link, the UTRAN starts to cipher the messages, when the layer 2 acknowledgement for the SECURITY MODE COMMAND is received.~~

~~For radio bearers in TM RLC, the UTRAN may set the IE "Activation Time", both in uplink and in downlink, in order to synchronise the time instant at which the cipher key shall be switched.~~

8.1.10.3 Reception of SECURITY MODE COMMAND message by the UE

Upon reception of the SECURITY MODE COMMAND message, the UE shall perform the actions for the received information elements according to 8.5.7.

~~For the signalling link, the UE shall start to transmit using the new cipher configuration, and to receive and decipher messages.~~

~~If the IE "Activation Time" is included for radio bearers in TM RLC, the UE shall switch to the new cipher configuration at the specified time.~~

The UE shall send a SECURITY MODE COMPLETE message on the uplink DCCH in AM RLC, using ~~the~~ any new cipher and/or integrity protection configuration.

For each radio bearer mapped on RLC-UM or RLC-AM, for which the ciphering configuration was changed, the UE shall include the current value of the RLC send state variable, VT(S), in the IE "Radio bearer uplink ciphering activation time info".

When the transmission of the SECURITY MODE COMPLETE message has been confirmed by RLC, the UE shall resume data transmission on any suspended radio bearers mapped on on RLC-UM or RLC-AM and the procedure ends.

8.1.10.4 Cipher ~~A~~activation time too short

If the time specified by the ~~IE "ciphering activation time"~~ IE "Activation time for DPCH" or the IE "Radio bearer downlink ciphering activation time info" contained in the IE "Ciphering mode info~~the IE "Activation Time"~~ has elapsed, the UE shall switch immediately to the new cipher configuration.

8.1.10.5 Reception of SECURITY MODE COMPLETE message by the UTRAN

UTRAN should apply integrity protection on the received SECURITY MODE COMPLETE message and all subsequent messages. When UTRAN has received a SECURITY MODE COMPLETE message and the integrity protection has successfully been applied, the procedure ends.

~~*Note : The same procedure can be used for integrity control. But this is FFS.*~~

8.5.7.3.8 Ciphering mode info

If the IE "Ciphering mode info" is present, the UE shall check the IE "Ciphering mode command" as part of the IE "Ciphering mode info", and perform the following:

~~• If IE "Ciphering mode command" has the value "start/restart", the UE shall start or restart ciphering, using the ciphering algorithm (UEA [TS 33.102]) indicated by the IE "Ciphering algorithm" at the time indicated by the IE "Ciphering activation time", both contained in the IE "Ciphering mode info". If a new ciphering key have been received, the new ciphering key shall be used at a restart.~~

1. If IE "Ciphering mode command" has the value "start/restart", the UE shall

   1.1 Start or restart ciphering, using the ciphering algorithm (UEA [TS 33.102]) indicated by the IE "Ciphering algorithm", if that IE is present. If the IE "Ciphering algorithm"is not present, the current algorithm shall be used.

   1.2 If a new ciphering key is available, the new ciphering key shall be used at a restart and the ciphering hyperframe number shall be set to zero.

   1.3 If the IE "Activation time for DPCH" is present in the IE "Ciphering mode info", the UE shall apply the new configuration at that time for radio bearers using RLC-TM.

   1.4 If the IE "Radio bearer downlink ciphering activation time info" is present in the IE "Ciphering mode info", the UE shall apply the following procedure for each radio bearer using RLC-AM and RLC-UM indicated by the IE "RB identity":

      1.4.1 Suspend data transmission on the radio bearer

      1.4.2 Store the current RLC send state variable, VT(S), for that radio bearer

      1.4.3 When the data transmission of that radio bearer is resumed, the UE shall switch to the new ciphering configuration according to the following:

         1.4.3.1 Use the old ciphering configuration for the transmitted and received RLC PDUs with RLC sequence number less than the RLC sequence number indicated in the IE "Radio bearer downlink ciphering activation time info".

         1.4.3.2 Use the new ciphering configuration shall be used for the transmitted and received RLC PDUs with RLC sequence number greater than or equal to the RLC sequence number indicated in the IE "Radio bearer downlink ciphering activation time info".

         1.4.3.3 For a radio bearer using RLC-AM, when the RLC sequence number indicated in the IE "Radio bearer downlink ciphering activation time info" is not included in the RLC transmission window, the UE may release the old ciphering configuration for that radio bearer.

   1.5 For the signalling radio bearer for RRC signalling using RLC-AM, the UE shall apply the new ciphering configuration directly.

~~•~~ 2. If IE "Ciphering mode command" has the value "modify", the UE shall change to the ciphering algorithm (UEA [TS 33.102]) indicated by the IE "Ciphering algorithm" contained in the IE "Ciphering mode info".

~~•~~ 3. If the IE "Ciphering mode command" has the value "stop", the UE shall stop using ciphering.

If the IE "Ciphering mode info" is not present, the UE shall not change the ciphering configuration.

10.1.7.6 SECURITY MODE CONTROL COMPLETE

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
RB Information elements				
Radio bearer uplink ciphering activation time info	O		Radio bearer activation time info	
~~Radio bearer identity~~		~~1 to <maxReconRBs>~~		~~Radio bearer identity 0 indicates the signalling link and is always present~~
~~**UE information elements**~~				
~~Downlink activation Time~~	~~O~~		~~Activation time~~	

Range Bound	Explanation
MaxReconRBs	For each radio bearer that is reconfigured

10.2.3.34 Ciphering mode info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Ciphering mode command	M		Enumerated (start/restart, modify, stop)	
Ciphering algorithm	C-*notStop*		UEA [TS 33.102]	
Ciphering activation time information	C-*start/restart*		~~Activation time~~	
Activation time for DPCH	O		Activation time	Used for radio bearers mapped on RLC-TM
Radio bearer downlink ciphering activation time info	O		Radio bearer activation time info	Used for radio bearers mapped on RLC-AM or RLC-UM

Condition	Explanation
notStop	The IE is present only when the IE "Ciphering mode command" has the values "start/restart" or "modify".
Start/restart	The IE is present only when the IE "Ciphering mode command" has the value "start/restart".

10.2.4.x Radio bearer activation time info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Radio bearer activation time		0 to <maxReconRBs>		
RB identity	M			
RLC sequence number	M		Integer (0..4095)	RLC SN [TS 25.322]

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

Document* *(R2-99k45)
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	011r3	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-RAN#6 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: TSG-RAN WG2 **Date:** 1999-12-02

Subject: Updates of the system information procedure

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

1. Added the possibility for the UE to get information in advance about exactly when the change will occur. It is proposed to include new information in PAGING TYPE 1 and to add a new message on FACH, which indicate when a change shall occur.

2. It is proposed to have different value range for the IE “value tag” depending on the area scope: 256 for PLMN and 4 for cell scope. For MIB, a value range of 8 is proposed.

3. It is proposed to include two new sections to specify the segmentation of system information blocks and the re-assembly of segments.

4. It is proposed to include a table specifying the characteristics for each system information block.

5. It is proposed to add a new section to specify the actions taken by the UE upon reception of a specific system information block.

6. DS-41 specific information has been added.

7. SFN added as part of RRC system information.

8. Restructuring of system information blocks, to separate fast changing information from static information.

9. Expiration time replaced with a timer equal to the repetition period. Also, the value tag of the system information block has been removed from the header of the system information blocks themselves (the value tags are now included in the scheduling information only).

10. Information about the cell broadcast service configuration in the cell has been added.

11. Inclusion of power offset between AICH/PICH and CPICH added.

12. Some minor editorial changes.

Clauses affected: 8.1.1, 8.2.1, 8.1.5.4, 10.1.3.3.(new), 10.1.6, 10.2.3, 10.2.6, 10.2.8.

Other specs affected:			
	Other 3G core specifications		→ List of CRs:
	Other GSM core specifications		→ List of CRs:
	MS test specifications		→ List of CRs:
	BSS test specifications		→ List of CRs:
	O&M specifications		→ List of CRs:

Other comments:

8.1.1 Broadcast of system information

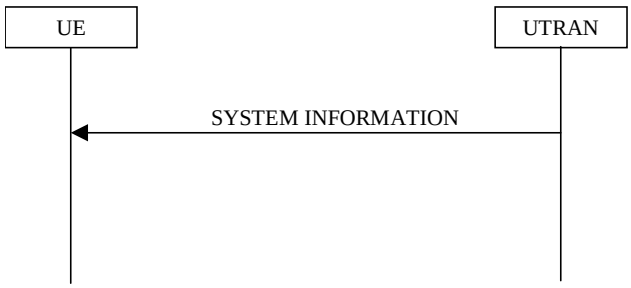


Figure 1. **Broadcast of system information**

8.1.1.1 General

The purpose of this procedure is to broadcast system information from the UTRAN to idle mode- and connected mode UEs in a cell.

8.1.1.1.1 System information structure

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

Figure 2 illustrates the relationship between the master information block and the system information blocks in a cell.

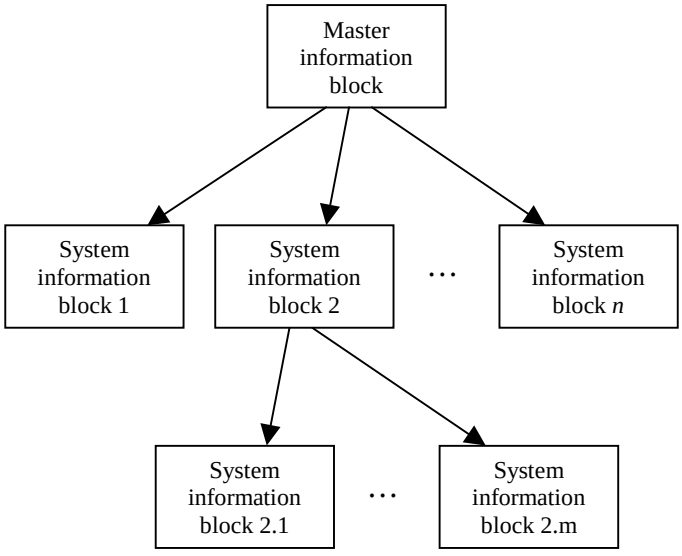


Figure 2. The overall structure of system information.

8.1.1.1.2 System information blocks

Table x.x specifies all system information blocks and their characteristics.

The *area scope column* in table x.x specifies the area where a system information block is valid. If the area scope is *cell*, the UE shall read the system information block every time a new cell is entered. If the area scope is *PLMN*, the UE shall check the value tag for the system information block when a new cell is entered. If the value tag for the system information block in the new cell is different compared to the value tag for the system information block in the old cell, the UE shall re-read the system information block.

The *UE mode/state column* in table x.x specifies in which UE mode or UE state the IEs in a system information block are valid. If the UE mode is *idle mode*, the UE shall use the IEs given by the system information block in idle mode. If the UE mode is *connected mode*, the UE shall use the IEs given by the system information block in connected mode. If the UE state is *CELL_FACH*, the UE shall use the IEs given by the system information block when in state CELL_FACH. In state *CELL_DCH*, the UEs fulfilling the *Additional requirements column* shall use the IEs given by the system information block when in state CELL_DCH.

The *transport channel* column in table x.x specifies where the system information block is broadcast. If the transport channel is *BCH*, the UE shall read the system information block on a BCH transport channel. If the transport channel is *FACH*, the UE shall read the system information block on a FACH transport channel.

The *scheduling information column* in table x.x specifies the position and repetition period for the SIB.

System information block	**Area scope**	**UE mode/state**	**Transport channel**	**Scheduling information**	**Additional requirements**
Master information block	Cell	Idle mode, Connected mode	BCH	SIB_POS = 0 FDD: SIB_REP = [8] TDD: SIB_REP = [8, 16, 32, 64] [SIB_OFF=1]	
		CELL_FACH	FACH	Scheduling not applicable	
System information block type 1	PLMN	Idle mode	BCH	Specified by the IE "Scheduling information"	
System information block type 2	PLMN	Connected mode	BCH	Specified by the IE "Scheduling information"	
System information block type 3	Cell	Idle mode, (Connected mode)	BCH	Specified by the IE "Scheduling information"	
System information block type 4	Cell	Connected mode	BCH	Specified by the IE "Scheduling information"	If System information block type 4 is not broadcast in a cell, the connected mode UE shall read System information block type 3
System information block type 5	Cell	Idle mode, (Connected mode)	BCH	Specified by the IE "Scheduling information"	

System information block type 6	Cell	Connected mode	BCH	Specified by the IE "Scheduling information"	If system information block type 6 is not broadcast in a cell, the connected mode UE shall read System information block type 5. If some of the optional IEs are not included in System information block type 6, the UE shall read the corresponding IEs in System information block type 5
System information block type 7	Cell	Idle mode and Connected mode	BCH	Specified by the IE "Scheduling information"	
System information block type 8	Cell	Connected mode	BCH	Specified by the IE "Scheduling information"	
System information block type 9	Cell	Connected mode	BCH	Specified by the IE "Scheduling information"	
System information block type 10	Cell	CELL_DCH	FACH		This system information block shall only be acquired by UEs with certain capabilities (DRAC). If the system information block is not broadcast in a cell, the DRAC procedures do not apply in this cell.
System information block type 11	Cell	Idle mode (Connected mode)	BCH	Specified by the IE "Scheduling information"	
System information block type 12	Cell	Connected mode	BCH	Specified by the IE "Scheduling information"	If some of the optional IEs are not included in System information block type 12, the UE shall read the corresponding IEs in System information block type 11.
System information block type 13	Cell	Idle Mode, Connected mode	BCH	Specified by the IE "Scheduling information"	
System information block type 13.1	Cell	Idle Mode, Connected mode	BCH	Specified by the IE "Scheduling information"	
System information block type 13.2	Cell	Idle Mode, Connected mode	BCH	Specified by the IE "Scheduling information"	
System information block type 13.3	Cell	Idle Mode, Connected mode	BCH	Specified by the IE "Scheduling information"	

System information block type 13.4	Cell	Idle Mode, Connected mode	BCH	Specified by the IE "Scheduling information"	
System information block type 14 (TDD)	Cell	Idle Mode, Connected mode	BCH, FACH	Specified by the IE "Scheduling information"	

Table x.x Specification of system information block characteristics

8.1.1.1.3 Segmentation and concatenation of system information blocks

A generic SYSTEM INFORMATION message is used to convey the system information blocks on the BCCH. A given BCCH may be mapped onto either a BCH- or a FACH transport channel. The size of the SYSTEM INFORMATION message shall fit the size of a BCH- or a FACH transport block.

Segmentation and concatenation of system information blocks is performed by the RRC layer in UTRAN. If a system information block is larger than the size of a SYSTEM INFORMATION message, it will be segmented and transmitted in several messages. If a system information block is smaller than a SYSTEM INFORMATION message, UTRAN may concatenate several complete system information blocks into the same message.

Four different segment types are defined:

- First segment.
- Subsequent segment
- Last segment
- Complete

Each of the types *First-*, *Subsequent-* and *Last segment* are used to transfer segments of a master information block or a system information block. The segment type *Complete* is used to transfer a complete master information block or a complete system information block.

Each segment consists of a header and a data field. The data field carries the actual system information elements. The header contains the following parameters:

- Segment type (First segment/Subsequent segment/Last segment/Complete).
- The number of segments in the system information block (SEG_COUNT). This parameter is only included in the header if the segment type is "First segment".
- SIB type. The SIB type uniquely identifies the master information block or a system information block.
- Segment index. This parameter is only included in the header if the segment type is "Subsequent segment" or "Last segment".

UTRAN may combine one or several segments of variable length in the same SYSTEM INFORMATION message. The following combinations are allowed:

1. First segment
2. Subsequent segment
3. Last segment
4. Last segment + one or several Complete
5. One or several Complete

Not more than one segment from each master information block or system information block should be transmitted in the same SYSTEM INFORMATION message. When combination 3, 4 or 5 is used, padding should be inserted until the SYSTEM INFORMATION message has the same size as the BCH- or the FACH transport block.

8.1.1.1.4 Re-assembly of segments

The RRC layer in the UE shall perform re-assembly of segments. All segments belonging to the same master information block or system information block shall be assembled in ascending order with respect to the segment index.

8.1.1.1.5~~3~~ Scheduling of system information

~~All system information blocks are broadcast on the BCCH using transparent mode. A given BCCH may be mapped onto either a BCH transport channel or a FACH transport channel.~~

Scheduling of system information blocks is performed by ~~T~~the RRC layer in UTRAN. If segmentation is used, it should be possible to schedule each segment separately. ~~performs segmentation of system information blocksinto segments that fits the size of a transport block. When there is space left in a transport block, concatenation of segments belonging to two [or more] different system information blocks into the same transport block may be performed. The RRC layer in the UE shall perform re-assembly of segments.~~

To allow the mixing of system information blocks with short repetition period and system information blocks with segmentation over many frames, UTRAN may multiplex segments from different system information blocks. Multiplexing and de-multiplexing isshall be performed by the RRC layer.

The scheduling of each system information block broadcast on a BCH transport channel is defined by the following parameters:

- the number of segments (SEG_COUNT).
- the repetition period (SIB_REP). The same value applies to all segments.
- the position (phase) of the first segmentwithin the repetition period (SIB_POS(0))
- Offset of the subsequent segments in ascending index order (SIB_OFF(i), i=1, 2, … SEG_COUNT-1)
  The position of the subsequent segments are calculated as: SIB_POS(i) = SIB_POS(i-1) + SIB_OFF(i).

The scheduling is based on the Cell System Frame number (SFN). The frame at which a particular segment (i) of a system information block occurs is defined as follows:

SFN mod SIB_REP = SIB_POS(i)

[Note that SIB_POS must be less than SIB_REP for all segments.]

In FDD, Tthe scheduling of the master information block is scheduled with a fixed by the pre-defined repetition rate = [8] and the position=0.and a fixed pre-defined position. In TDD, the scheduling of the master information block is is fixed to one of the constant repetition rates 8, 16, 32 or 64 and the position=0. The length of the master information block shall not exceed the size of a transport block.

8.1.1.2 Initiation

The system information is continuously repeated on a regular basis in accordance with -the scheduling defined for each system information block.

[The UTRAN may temporarily send information blocks other than those scheduled.]

8.1.1.3 Reception of SYSTEM INFORMATION messages by the UE

The UE shall receive SYSTEM INFORMATION messages broadcast on a BCH transport channel in idle mode as well as in states CELL_FACH, CELL_PCH and URA_PCH. Further, the UE shall receive SYSTEM INFORMATION messages broadcast on a FACH transport channel when in CELL_FACH state. In addition, UEs with certain service capabilities shall receive system information on a FACH transport channel when in CELL_DCH state.

Idle mode- and connected mode UEs may acquire different combinations of system information blocks. Before each acquisition, the UE should identify which system information blocks that are needed.

The UE may store system information blocks (including their area scope and value tag) for different cells and different PLMNs, to be used if the UE returns to these cells. This information is valid for a period of [TBD] hours after reception. All stored system information blocks shall be considered as invalid after the UE has been switched off.

When selecting a new PLMN, the UE shall consider all current system information blocks to be invalid. If the UE has stored valid system information blocks for the selected cell of the new PLMN, the UE may set those as current system information blocks.

8.1.1.3.1 Reception of SYSTEM INFORMATION messages broadcast on a BCH transport channel

When selecting a new cell, the UE shall read the master information block. The UE may use the pre-defined scheduling information to locate the master information block in the cell.

On reception of the master information block, the UE shall

- Check the IE "PLMN identity" in the master information block and verify that it is the selected PLMN, store the "value tag" ~~sent in~~into the variable VALUE TAG for the master information block.
- Check and store the IE "value tag" for all system information blocks which are to be used by the UE. If, for any system information blocks, the value tag is different from the value of the variable VALUE_TAG for that system information block or if no IEs from corresponding system information block have been stored~~exists~~, the UE shall read and store the IEs of that system information block.

The UE may use the scheduling information given by the master information to locate each system information block to be acquired.

Upon reception of a system information block, the UE shall perform the actions specified in subclause 8.1.1.5.

~~• if the IE "value tag" is present, store the value in the variable VALUE_TAG for that system information block~~

~~• if the IE "expiration time" is present, start a timer EXPIRATION_TIMER for that system information block. The timer shall be set to the value indicated by the IE "expiration time".~~

~~• store the remaining IEs in the system information block~~

~~• forward non-access stratum system information to upper layers~~

~~If the system information block contains IEs with scheduling information and value tags for other system information blocks, the UE shall act on those IEs as specified for the scheduling information and value tags contained within the master information block.~~

8.1.1.3.2 Reception of SYSTEM INFORMATION messages broadcast on a FACH transport channel

The master information block is not broadcast regularly on FACH. The master information block on BCH indicates the available system information blocks on FACH.

When receiving system information blocks on FACH, the UE shall perform the ~~same~~ action as defined in subclause 8.1.1.5.~~for BCH in 8.1.1.3.1.~~

8.1.1.4 Modification of system information

Different rules apply for the updating of different types of system information blocks. If the system information block ~~contains~~ has a "value tag" in the master information block or higher level system information block, UTRAN shall indicate when any of the information elements are modified by changing the value of Value TAG. [Even if the value tag does not change, the UE shall consider the system information block to be invalid after a period of [TBD] hours from reception.] In addition to this , there are system information block types which contain information elements changing too frequently to be indicated by change in value tag. This type of system information blocks are not linked to a value tag in the master information block or higher level system information block. ~~If the system information block contains an expiration time, the UE shall re-readthe system information, if still needed, when the timer has expired.~~ All stored system information blocks shall be considered as invalid after the UE has been switched off.

8.1.1.4.1 Modification of system information blocks using a value tag

When system information is modified, UTRAN shall perform the following actions to indicate the change to the UEs:

- update the actual system information ~~and change the "value tag"~~ in the corresponding system information block.
- start to send the updated system information block on the BCCH instead of the old system information block.
- If the updated system information block is linked to a higher level system information block, update the higher level system information block with the "value tag" of the modified system information block.
- update the master information block with the "value tag" of the modified system information block or higher level system information block and change the "value tag" of the master information block.
- send the new master information block on the BCCH mapped on BCH instead of the old master information block.
- send the new master information block on the BCCH mapped on FACH in order to reach all UEs in state CELL_FACH. UTRAN may repeat the new master information block on the FACH to increase the probability of proper reception in all UEs needing the information.
- send the PAGING TYPE 1 message on the PCCH in order to reach idle mode UEs as well as connected mode UEs in state CELL_PCH and URA_PCH. In the IE "BCCH Modification Information" in the PAGING TYPE 1 message, UTRAN shall indicate the new value tag for the master information block. The PAGING TYPE 1 message should be sent in all paging occasions.
- It should be noted that for the proper operation of the BCCH Modification Information sent on the PCH, the System Information should not be changed more frequently than can be accommodated by mobile stations operating at the maximum DRX cycle length supported by the UTRAN.

On reception of the PAGING TYPE 1 message, the UE shall

- check the "value tag" of the master information block indicated in the IE "BCCH Modification information". If the value tag is different from the value stored in the variable VALUE_TAG for the master information block, the UE shall read the new master information.

At reception of the new master information block (received on the BCCH mapped on BCH or FACH), the UE shall:

- store the new "value tag" sent in the variable VALUE_TAG for the master information block.
- check the IE "value tag" for all system information blocks which are used by the UE. The UE shall read each system information block, for which the value tag is different from the value stored in the variable VALUE_TAG for that system information block. On reception of a modified system information block, the UE shall perform the actions specified in subclause 8.1.1.5.

8.1.1.4.2 Modification of system information ~~blocks containing an expiration~~ without value tag~~time~~

When the UE has acquired a system information block not linked to a value tag ~~containing the IE "expiration time"~~, a timer shall be started using a~~the~~ value equal to the repetition rate (SIB_REP) for that system information block~~indicated in that IE~~. When the timer expires, the information carried in the system information block is considered to be invalid and the UE shall acquire the system information block before the ~~old~~ system information elements can be use. On reception of a modified system information block, the UE shall perform the actions specified in subclause 8.1.1.5.

8.1.1.4.3 Time critical modification of system information blocks

For modification of some system information elements, e.g. reconfiguration of the channels, it is important for the UE to know exactly when a change occurs. If such case, the UTRAN performs the following actions to indicate the change to the UEs:

- send the message PAGING TYPE 1 on the PCCH in order to reach idle mode UEs as well as connected mode UEs in state CELL_PCH and URA_PCH. In the IE "BCCH Modification Information", UTRAN shall indicate the time when the change will occur and the new value tag that will apply for the master information block after the change has occurred. The PAGING TYPE 1 message shall be sent in all paging occasions.
- send the message SYSTEM INFORMATION CHANGE INDICATION on the BCCH mapped on FACH in order to reach all UEs in state CELL_FACH. In the IE "BCCH Modification Information", UTRAN shall indicate the time when the change will occur and the new value tag that will apply for the master information block after the change has occurred. UTRAN may repeat the SYSTEM INFORMATION CHANGE INDICATION on the FACH to increase the probability of proper reception in all UEs needing the information.
- update the actual system information and change the "value tag" in the corresponding system information block.
- update the master information block with the "value tag" of the modified system information block and change the "value tag" of the master information block.
- at the indicated time, start to send the new master information block on the BCCH mapped on BCH instead of the old master information block and the updated system information block on the BCCH instead of the old system information block.

At reception of the PAGING TYPE 1 or SYSTEM INFORMATION CHANGE INDICATION message, the UE shall

- wait until the starting time, indicated in the IE "BCCH Modification Information". When the starting time occurs, the UE shall read the new master information block.

At reception of the new master information block, the UE shall:

- store the new "value tag" of the master information block.
- check the IE "value tag" for all system information blocks which are used by the UE. The UE shall read each system information block, for which the value tag is different from the value stored in the variable VALUE_TAG for that system information block.. At reception of a modified system information block, the UE shall perform the actions specified in subclause 8.1.1.5.

If the UE can not find the master information block, it can assume that a physical reconfiguration has occurred and perform a new cell search.

8.1.1.5 Actions upon reception of system information blocks

8.1.1.5.1 System Information Block type 1

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

- forward the content of the IE "NAS system info" to the non-access stratum entity indicated by the IE "CN domain identity".
- use the IE "CN_DRX_cycle length" to calculate frame number for the Paging Occasions and Page indicator as specified in TS 25.304.

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

8.1.1.5.2 System Information Block type 2

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

- use the IE "UTRAN_DRX_cycle length" to calculate frame number for the Paging Occasions and Page indicator as specified in TS 25.304.
- if in state CELL_FACH or CELL_PCH, start to perform periodical cell updates using the information in the IE "Information for periodic cell and URA update".
- if in state URA_PCH, start to perform periodical URA updates using the information in the IEs "URA identity" and "Information for periodic cell and URA update".

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

8.1.1.5.3 System Information Block type 3

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

- if IEs containing scheduling information for other system information blocks are included, the UE shall act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.

8.1.1.5.4 System Information Block type 4

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

- if IEs containing scheduling information for other system information blocks are included, the UE shall act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.

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

8.1.1.5.5 System Information Block type 5

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

- if IEs containing scheduling information for other system information blocks are included, the UE shall act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.
- if the IE "Frequency info" is included, tune to the frequency given by this IE and use it as the active frequency.
- let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink.
- start to receive the physical channel of type AICH using the parameters given by the IE "AICH info".
- start to receive the physical channel of type PICH using the parameters given by the IE "PICH info".
- start to monitor its paging occasions on the PICH.
- start to receive the physical channel(s) of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info".

•

8.1.1.5.6 System Information Block type 6

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

- if IEs containing scheduling information for other system information blocks are included, the UE shall act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.
- if the IE "Frequency info" is included, tune to the frequency given by this IE and use it as the active frequency.
- let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in system information block type 5 and use that information to configure the PRACH.
- start to receive the physical channel of type AICH using the parameters given by the IE "AICH info". If the IE "AICH info" is not included, the UE shall read the corresponding IE in system information block type 5 and use that information.
- start to receive the physical channel of type PICH using the parameters given by the IE "PICH info". If the IE "PICH info" is not included, the UE shall read the corresponding IE in system information block type 5 and use that information.
- start to monitor its paging occasions on the PICH.
- start to receive the physical channel(s) of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info". If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in system information block type 5 and use that information.

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

8.1.1.5.7 System Information Block type 7

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

- start a timer set to the value given by the repetition period (SIB_REP) for that system information block.

8.1.1.5.8 System Information Block type 8

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

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

8.1.1.5.9 System Information Block type 9

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

- start a timer set to the value given by the repetition period (SIB_REP) for that system information block

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

8.1.1.5.10 System Information Block type 10

If in state CELL_DCH, the UE should store all relevant IEs included in this system information block. The UE shall

also

- start a timer set to the value given by the repetition period (SIB_REP) for that system information block

If in idle mode, state CELL_FACH, state CELL_PCH or state URA_PCH, the UE shall not use the values of the IEs in this system information block.

8.1.1.5.11 System Information Block type 11

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

- if IEs containing scheduling information for other system information blocks are included, the UE shall act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.
- for each IE "measurement type" start a measurement using the set of IEs specified for that measurement type.

8.1.1.5.12 System Information Block type 12

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

- if IEs containing scheduling information for other system information blocks are included, the UE shall act on those IEs in a similar manner as specified for the scheduling information contained within the master information block.
- for each IE "measurement type" start a measurement using the set of IEs specified for that measurement type.
- if the IEs "Intra-frequency cell info" and/or "Intra-frequency measurement quantity" is not included in the system information block, read the corresponding IE(s) in system information block type 11 and use that information for the intra-frequency measurement.
- if the IEs "Inter-frequency cell info" and/or "Inter-frequency measurement quantity" is not included in the system information block, read the corresponding IE(s) in system information block type 11 and use that information for the inter-frequency measurement.
- if the IEs "Inter-system cell info" and/or "Inter-system measurement quantity" is not included in the system information block, read the corresponding IE(s) in system information block type 11 and use that information for the inter-system measurement.
- associate each measurement with the identity number given by the IE "Measurement identity number".
- if in state CELL_PCH or URA_PCH ignore the IEs "Intra-frequency reporting criteria" and "Intra-frequency reporting Quantity".
- if the IEs "Intra-frequency reporting Quantity for RACH Reporting" and/or "Maximum number of reported cells on RACH" is not included, store the corresponding IE(s) given by the system information block type 11.

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

8.1.1.5.13 System Information Block type 13

If in idle or connected mode, the UE should store all relevant IEs included in this system information block except for the IEs "CN DRX cycle length", "UE timers in idle mode" and "Capability update requirement" which shall be stored only in the idle mode case. The UE shall read SIB type 13 and the associated SIB type 13.1, 13.2, 13.3 and 13.4 only

when the variable SELECTED_CN has the value “ANSI-41” and the IE “CN type” in the Master Information Block has the value “ANSI-41” or “ANSI-41 and GSM-MAP”. The UE shall also

- forward the content of the IE “NAS(ANSI-41) system info” to the non-access stratum entity indicated by the IE “CN domain identity”.
- use the IE “CN_DRX_cycle length” to calculate frame number for the Paging Occasions and Page indicator as specified in TS 25.304.

8.1.2 Paging

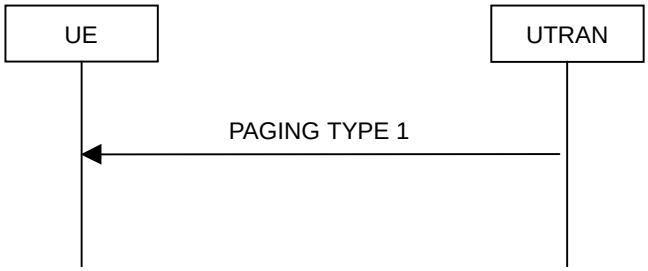


Figure 3. Paging

8.1.2.1 General

This procedure is used to transmit paging information to selected UEs in idle mode, CELL_PCH or URA_PCH state using the paging control channel (PCCH). Upper layers in the network may request paging, to e.g. establish a signalling connection. UTRAN may initiate paging in CELL_PCH or URA_PCH state, to trigger a UE state. In addition, UTRAN may initiate paging in idle mode, CELL_PCH and URA_PCH state to trigger reading of updated system information.

8.1.2.2 Initiation

UTRAN initiates the paging procedure by broadcasting a PAGING TYPE 1 message on an appropriate paging occasion on the PCCH.

UTRAN may repeat paging of a UE in several paging occasions to increase the probability of proper reception of a page.

UTRAN may page several UEs in the same paging occasion by including one IE “Paging record” for each UE in the PAGING TYPE 1 messageUTRAN may also indicate that system information has been updated, by including the value tag of the master information block in the IE “BCCH modification information” in the PAGING TYPE 1 message. In this case, UTRAN may omit the IEs “Paging record”.

UTRAN shall not set more than one IE “Paging record” for same UE in one PAGING TYPE 1 message.

8.1.2.3 Reception of an PAGING TYPE 1 message by the UE

The UE shall in idle mode, CELL_PCH state and URA_PCH state receive the paging information for all its monitored paging occasions. For an UE in idle mode, the paging occasions are specified in TS 25.304. For an UE in CELL_PCH state and URA_PCH state the paging occasions occasions occasions depend on the “UTRAN DRX Cycle length” and the “DRX indicator”, as specified in subclause 8.5.7.3.6 and 8.5.3.7 respectively.

When the UE receives a PAGING TYPE 1 message, it shall check each occurrence of the IE “Paging record”

For each included paging record the UE shall compare the included identity with the identity of the UE according to the following:

An idle mode UE shall;

- if the IE “paging originator” is CN, compare the included identities of type CN UE identity with all of its allocated CN UE identities.
- for each match, forward the identity and paging cause to the upper layer entity indicated by the IE “CN domain identity”.
- store the paging cause to be included in the RRC connection establishment procedure.
- if the IE “paging originator” is UTRAN, ignore that paging record.

A connected mode UE shall;

- if the IE “paging originator” is UTRAN, compare the included identities of type “Connected mode identity” with its allocated U-RNTI.
- for each match,, the UE shall enter CELL_FACH state and perform a cell update procedure with cause “paging response” as specified in subclause 8.3.1.2.4.
- if the IE “paging originator” is CN, ignore that paging record.

If the IE “BCCH modification info” is included, the UE shall ~~check the included value tag of the master information block and, if necessary, read system information on the BCCH~~ perform the actions as specified in subclause 8.1.1

8.1.5.4 Reception of an RRC CONNECTION RE-ESTABLISHMENT message by the UE

Upon reception of the RRC CONNECTION RE-ESTABLISHMENT message the UE shall

- Stop timer T301
- Re-establish the RRC connection according to the IEs included in the RRC CONNECTION RE-ESTABLISHMENT message
- Transmit a RRC CONNECTION RE-ESTABLISHMENT COMPLETE message on the uplink DCCH using AM RLC.

The UE shall use the contents of the RRC CONNECTION RE-ESTABLISHMENT message as specified in clause 8.5.7, unless specified otherwise in the following.

- For each reconfigured radio bearer use the mapping option applicable for the transport channels used according to the IE “RB mapping info”.
- Configure MAC multiplexing if that is needed in order to use said transport channel(s).
- Use MAC logical channel priority when selecting TFC in MAC.

If neither the IEs “PRACH info” nor “Uplink DPCH info” is included, the UE shall

- Let the physical channel of type PRACH that is given in system information Block Type 6~~7~~ be the default in uplink. If system inforamtion block type 6 is not present in the cell, the UE shall let the physical channel of type PRACH given in system information block type 5 be the default in uplink.

If neither the IEs “Secondary CCPCH info” nor “Downlink DPCH info” is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If the IE “TFS” is neither included nor previously stored in the UE for that transport channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete the stored TFS and use the TFS given in system information

If the IE “New C-RNTI” is included, the UE shall

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If the the IE "New U-RNTI" is included, the UE shall update its identity.

If the IEs “CN domain identity” and “NAS system information” are included, the UE shall

- Forward the content of the IE to the non-access stratum entity of the UE indicated by the IE “CN domain identity”.

The UE shall enter a state according to 8.5.8.

10.1.3.3 SYSTEM INFORMATION CHANGE INDICATION

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

RLC-SAP: TM

Logical channel: BCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
Other information elements				
BCCH modification info	M			

10.1.6 System Information Messages

10.1.6.1 SYSTEM INFORMATION

RLC SAP: TM

Logical channel: BCCH

Direction: UTRAN -> UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message type	~~C channel~~O			The message type is mandatory on the FACH, and absent on the BCH
CHOICE *mode*				
> FDD				
>> SFNprime	O		Enumerated (0,2..4094)	The IE is mandatory on the BCH, and absent on the FACH SFN=SFNprime (for first 10ms frame of 20ms TTI), SFN=SFNprime+1 (for last 10ms frame of 20ms TTI)
CHOICE Segment combination	M			
> Combination 1				
>> First ~~SIB~~ Segment			First ~~SIB~~ Segment	
> Combination 2				
> >Subsequent ~~SIB~~ Segment			Subsequent ~~SIB~~ Segment	
> Combination 3				
> **>** Last segment~~Parts~~				
> Combination 4				
>> Last ~~SIB~~ Segment	~~C number~~		Last ~~SIB~~ Segment	
>> Complete ~~SIB~~	~~C number~~	1~~0~~..indefinite	Complete ~~SIB~~	
> Combination 5				
>> Complete		1..indefinite	Complete	
SI Padding	C filling			

Condition	Explanation
~~Channel~~	~~The message type is mandatory on the FACH, and absent on the BCH~~
filling	The padding is constrained to be such that the message fills the transport block.
~~Number~~	~~If 'parts' is present, then~~ ~~a) There shall be 0 or 1 'Last SIB segment;~~ ~~c) 'Parts' shall not be empty.~~

10.1.6.1.1~~2~~ First ~~SIB~~ Segment

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

~~RLC_SAP: TM~~

~~Logical channel: BCCH~~

~~Direction: UTRAN -> UE~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~Segment Type~~	~~M~~			
Other information elements				
SIB type	M			
SEG_COUNT	M			
SIB data	M			

10.1.6.1.2~~3~~ Subsequent ~~SIB~~ Segment

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

~~RLC_SAP: TM~~

~~Logical channel: BCCH~~

~~Direction: UTRAN -> UE~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~Segment type~~	~~M~~			
Other information elements				
SIB type	M			
Segment index	M			
SIB data	M			

10.1.6.1.3~~4~~ Last ~~SIB~~ Segment

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

~~RLC_SAP: TM~~

~~Logical channel: BCCH~~

~~Direction: UTRAN -> UE~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~Segment type~~	~~M~~			
Other information elements				
SIB type	M			
Segment index	M			
SIB data	M			

10.1.6.1.4~~4~~ Complete ~~SIB~~

This segment type is used to transfer a non-segmented system information block.

~~RLC_SAP: TM~~

~~Logical channel: BCCH~~

~~Direction: UTRAN -> UE~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~Segment type~~	~~M~~			
Other information elements				
SIB type	M			
SIB content	M			

10.1.6.54 System Information Blocks

10.1.6.54.1 SIB Content

SIB Segments are the result of the segmentation of a 'SIB Content' IE. The SIB content IE is developed hereafter :

Information Element	Presence	Range	IE type and reference	Semantics description
CHOICE SIB type	M			
> Master information block				
> System information block type 1				
> System information block type 2				
> System information block type 3				
> System information block type 4				
> System information block type 5				
> System information block type 6				
> System information block type 7				
> System information block type 8				
> System information block type 9				
> System information block type 10				
> System information block type 11				
> System information block type 12				
> System information block type 13				
> System information block type 13.1				
> System information block type 13.2				
> System information block type 13.3				
> System information block type 13.4				
> System information block type 14				
~~SI Padding~~	~~C filling~~			

Condition	Explanation
SIB Type	The common value of the 'SIB type' field in the segment(s).
~~filling~~	~~It is an acceptable constraint that, when the last segment of the SIB is the last IE of a System Information message, the padding is constrained to be such that it fills the transport block.~~

10.1.6.54.2 Master Information Block

~~Area scope: Cell~~

~~UE mode: Idle mode and connected mode~~

Information Element	Presence	Range	IE type and reference	Semantics description
Other information elements				
MIB Value tag	M			
CHOICE mode				
TDD				
SFNprime	M		Integer (0,2..4094)	SFN=SFNprime (for first 10ms frame of 20ms TTI), SFN=SFNprime+1 (for last 10ms frame of 20ms TTI)
References to other system information blocks		1 .. <maxSysInfoBlockcount>		
Scheduling information	M			
CN information elements				
CN Type	M			
PLMN Identity	M			

~~**Condition**~~	~~**Explanation**~~
~~*Blocktype*~~	~~The presence of this IE depends on the value of the preceding SIB type. This IE is mandatory if the specification of the SIB of that SIB type includes as first IE a Value tag IE.~~

Range Bound	**Explanation**
MaxSysInfoBlockcount	Maximum number of references to other system information blocks.

10.1.6.54.3 System Information Block type 1

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

~~Area scope: PLMN~~

~~UE mode: idle mode~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~Other information elements~~				
~~Value tag~~	~~M~~			
CN information elements				
CN information		1 to <maxCNdomains>		Send CN information for each CN domain.
CN domain identity	M			
NAS system information	M			
CN DRX cycle length	M			
UE information				
UE Timers and counters in idle mode	M			~~Note: Only timers and counters used in idle mode~~
Capability update requirement	O			

Range Bound	Explanation
MaxCNdomains	Maximum number of CN domains

10.1.6.54.4 System Information Block type 2

The system information block type 2 contains the URA identity and information for periodic cell and URA update. It also includes the UE timers and counters to be used in connected mode.

~~Area scope: PLMN~~

~~UE mode: connected mode~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~Other information elements~~				
~~Value tag~~	~~M~~			
UTRAN mobility information elements				
URA identity		1 ..<maxURAcount>		
Information for periodic cell and URA update	M			
UE information				
UE Timers and counters in connected mode	M			~~Note: Only timers and counters used in connected mode~~
UTRAN DRX cycle length	M			

Range Bound	Explanation
MaxURAcount	Maximum number of URA's in a cell

10.1.6.54.5 System Information Block type 3

The system information block type 3 contains parameters for cell selection and re-selection. The block may also contain scheduling information for other system information blocks.

~~Area scope: cell~~

~~UE mode: idle mode (and connected mode)~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~**Other information elements**~~				
~~Value tag~~	~~M~~			
References to other system information blocks		0 .. <maxSysInfoBlockcount>		
Scheduling information	M			
UTRAN mobility information elements				
Cell identity	M			The necessity and usage of cell identity is FFS.
Cell selection and re-selection info	M			

Range Bound	Explanation
MaxSysInfoBlockcount	Maximum number of references to other system information blocks.

10.1.6.54.6 System Information Block type 4

The system information block type 4 contains parameters for cell selection and re-selection to be used in connected mode. The block may also contain scheduling information for other system information blocks. ~~The block is optional. When not sent, the MS the MS shall apply in connected mode the values of the similar information indicated for idle mode.~~

~~Area scope: cell~~

~~UE mode: connected mode~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~**Other information elements**~~				
~~Value tag~~	~~M~~			
References to other system information blocks		0 .. <maxSysInfoBlockcount>		
Scheduling information	M			
UTRAN mobility information elements				
Cell identity	M			The necessity and usage of cell identity is FFS.
Cell selection and re-selection info	M			

Range Bound	Explanation
MaxSysInfoBlockcount	Maximum number of references to other system information blocks.

10.1.6.54.7 System Information Block type 5

The system information block type 5 contains parameters for the configuration of the common physical channels in the cell. The block may also contain scheduling information for other system information blocks.

~~Area scope: cell~~

~~UE mode: idle mode (and connected mode)~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~**Other information elements**~~				
~~Value tag~~	~~M~~			
References to other system information blocks		0 .. <maxSysInfoBlockcount>		
Scheduling information	M			
PhyCH information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
CHOICE *mode*				
TDD				
PSCH Time slot				
FDD				
Secondary CPICH info	O			Note 2
Primary CCPCH info	O			Note 1
PRACH information		1 .. <maxPRACHcount>		
PRACH info	M			
TFS	M			
CHOICE *mode*				
FDD				
PRACH partitioning	M			
Primary CPICH DL TX power	M			
Constant value	M			
PRACH power offset	M			
AICH info	M			
TDD				
ASC info	O			
Secondary CCPCH information		1 .. <maxSCCPCHcount>		
Secondary CCPCH info	M			
TFCS	M			For FACHs and PCH
FACH/PCH information		1 .. <maxFACHcount>		
TFS				For each FACHs and PCH
CTCH indicator	M	Boolean		The value “TRUE” indicates that a CTCH is mapped on the FACH, and “FALSE” that no CTCH is mapped.
PICH info	C-Pich			
CBS DRX Level 1 information	C-CTCH			
~~Maximum allowed UL TX power~~				
~~**UE Information elements**~~				
~~UTRAN_DRX_cycle length~~				

Note 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH.

Note 2: This parameter is needed in case of using adaptive array antenna.

Condition	Explanation
CTCH	Present only when the IE "CTCH indicator" is equal to TRUE for at least one FACH.
Pich	PICH info is present only when PCH is multiplexed on Secondary CCPCH
Range Bound	**Explanation**
MaxPRACHcount	Maximum number of PRACH's
MaxSCCPCHcount	Maximum number of secondary CCPCH's
MaxFACHcount	Maximum number of FACH's mapped onto secondary CCPCH's
MaxPCHcount	Maximum number of PCH's mapped onto secondary CCPCH's
MaxSysInfoBlockcount	Maximum number of references to other system information blocks.

10.1.6.54.8 System Information Block type 6

The system information block type 6 contains parameters for the configuration of the common physical channels to be used in connected mode. The block may also contain scheduling information for other system information blocks. ~~The block is optional. When not sent, the MS the MS shall apply in connected mode the values of the similar information indicated for idle mode.~~

~~Area scope: cell~~

~~UE mode: connected mode~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~**Other information elements**~~				
~~Value tag~~	~~M~~			
References to other system information blocks		0 .. <maxSysInfoBlockcount>		
Scheduling information	M			
PhyCH information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Primary CCPCH info	O			Note 1
CHOICE *mode*				
FDD				
PICH Power offset	M			
AICH Power offset	M			
Secondary CPICH info	O			Note 2
PRACH information		0 .. <maxPRACHcount>		
PRACH info	M			
TFS	M			
CHOICE *mode*				
FDD				
PRACH partitioning	M			
Primary CPICH DL TX power	M			
Constant value	M			
PRACH power offset	M			
AICH info	M			
Secondary CCPCH information		0 .. <maxSCCPCHcount>		
Secondary CCPCH info	M			
TFCS	M			For FACHs and PCH
FACH/PCH information		1 .. <maxFACHcount>		
TFS				For each FACHs and PCH
CTCH indicator	M	Boolean		The value “TRUE” indicates that a CTCH is mapped on the FACH, and “FALSE” that no CTCH is mapped.
PICH info	C-Pich			
CBS DRX Level 1 information	C-CTCH			
~~Maximum allowed UL TX power~~				
~~**UE Information elements**~~				
~~UTRAN DRX cycle length~~				

Note 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH.

Note 2: This parameter is needed in case of using adaptive array antenna.

Condition	Explanation
CTCH	Present only when the IE “CTCH indicator” is equal

	to TRUE for at least one FACH.
Pich	PICH info is present only when PCH is multiplexed on Secondary CCPCH

Range Bound	**Explanation**
MaxPRACHcount	Maximum number of PRACH's
MaxSCCPCHcount	Maximum number of secondary CCPCH's
MaxFACHcount	Maximum number of FACH's mapped onto secondary CCPCH's
MaxPCHcount	Maximum number of PCH's mapped onto secondary CCPCH's
MaxSysInfoBlockcount	Maximum number of references to other system information blocks.

10.1.6.54.9 System Information Block type 7

The system information block type 7 contains the fast changing parameters UL interference and Dynamic persistence level.~~uplink access control parameters and the PRACH power control information to be used in the cell.~~

~~Area scope: cell~~

~~UE mode: idle mode (and connected mode)~~

Information Element	**Presence**	**Range**	**IE type and reference**	**Semantics description**
~~**Other information elements**~~				
~~Expiration time~~	~~M~~			~~The expiration time specifies how long time the values of the information elements included this system information block are valid.~~
~~**UE information**~~				
~~Uplink access control info~~	~~M~~			
PhyCH information elements				
UL interference	M			
PRACHs listed in system information block type 5 ~~information~~		1 .. <maxPRACHcount>		The order of the PRACHs is the same as in system information block type 5.
~~PRACH power control inform.~~	~~M~~			
Dynamic persistence level	M			
PRACHs listed in system information block type 6		0 .. <maxPRACHcount>		The order of the PRACHs is the same as in system information block type 6.
Dynamic persistence level	M			

Range Bound	**Explanation**
MaxPRACHcount	Maximum number of PRACH's

~~10.1.6.4.10 System Information Block type 8~~

~~The system information block type 8 contains the uplink access control parameters and the PRACH power control information to be used in connected mode. The block is optional. When not sent, the MS shall apply in connected mode the values of the similar information indicated for idle mode.~~

~~Area scope: cell~~

~~UE mode: connected mode~~

~~Information Element~~	~~Presence~~	~~Range~~	~~IE type and reference~~	~~Semantics description~~
~~Other information elements~~				
~~Expiration time~~	~~M~~			~~The expiration time specifies how long time the values of the information elements included in this system information block are valid.~~
~~UE information~~				
~~Uplink access control info~~	~~O~~			
~~PhyCH information elements~~				
~~PRACH information~~		~~0 to <maxPRACHcount>~~		
~~PRACH power control inform.~~	~~M~~			

~~Range Bound~~	~~Explanation~~
~~*MaxPRACHcount*~~	~~Maximum number of PRACH's~~

10.1.6.54.10 System Information Block type 8 (FDD)

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

Information Element	**Presence**	**Range**	**IE type and reference**	**Semantics description**
UE information				
CPCH parameters	M			
PhyCH information elements				
CPCH SET info		1 .. <maxCPCHsetcount>		

Range Bound	**Explanation**
MaxCPCHsetcount	Maximum number of CPCH sets per Node B

10.1.6.54.11 System Information Block type 9 (FDD)

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

Area scope: cell

UE mode: connected mode

Information Element	Presence	Range	IE type and reference	Semantics description
~~**Other information elements**~~				
~~Expiration time~~	~~M~~			~~The expiration time specifies how long time the values of the information elements included in this system information block are valid.~~
~~**UE information**~~				
~~CPCH parameters~~	~~M~~			
PhyCH information elements				
~~CPCH SET info~~	~~M~~			
CPCH set persistency value	M	1 .. <maxCPCHsetcount>		

Range Bound	**Explanation**
MaxCPCHsetcount	Maximum number of CPCH sets per Node B

10.1.6.54.12 System Information Block type 10 (FDD)

The system information block type 10 contains information to be used by UEs having their DCH controlled by a DRAC procedure. ~~The system information block is optional. That the SIB is not sent indicates that the DRAC procedures do not apply in this cell.~~

~~Area scope: cell~~

~~UE mode: connected mode~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~**Other information elements**~~				
~~Expiration time~~	~~M~~			~~The expiration time specifies how long time the values of the information elements included in this system information block are valid.~~
UE information				
DRAC information		1 .. <maxDRACclasses>		DRAC information is sent for each class of terminal
Transmission probability	M			
Maximum bit rate	M			

Range Bound	Explanation
MaxDRACclasses	Maximum number of UE classes which would require different DRAC parameters

10.1.6.54.13 System Information Block type 11

The system information block type 11 contains measurement control information to be used in the cell.~~idle mode. The values may also be used in connected mode if the corresponding IEs are not specified in System information block type 12.~~ The block may also contain scheduling information for other system information blocks.

~~Area scope: cell~~

~~UE mode: idle mode (and connected mode)~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~Other information elements~~				
~~Value tag~~	~~M~~			
References to other system information blocks		0 .. <maxSysInfoBlockcount>		
Scheduling information	M			
Measurement information elements				
Measurment control information		1 .. <maxMeasurementTypecount>		
Measurement type	M			
CHOICE Measurement	~~C – Intrafreq~~			
Intra-frequency	C – Intrafreq			
Intra-frequency cell info	~~M~~	1 .. <MaxIntraCells>		
Intra-frequency Measurement quantity	M			
Intra-frequency reporting Quantity for RACH Reporting	M			
Maximum number of Reported cells on RACH	M			
~~Intra-frequency reporting criteria~~				
~~Intra-frequency reporting Quantity~~	~~O~~			
Inter-frequency	C – Interfreq			
Inter-frequency cell info	~~M~~	1 .. <MaxInterCells>		
Inter-frequency Measurement quantity	M			
Inter-system	C – Intersys			
Inter-system cell info	M	1 .. <MaxInterSysCells>		
Inter-system measurement Quantity	M			

Condition	Explanation
Measurement	The choice shall be consistent (same name) with the value of the 'Measurement type' IE
Intersys	Measurement type = Inter system measurement
Interfreq	Measurement type = Inter frequency measurement
Intrafreq	Measurement type = Intra frequency measurement
Blocktype	The presence of this IE depends on the definition of the system information block type.

Range Bound	Explanation
MaxMeasTypeCount	Maximum number of measurement types
MaxSysInfoBlockcount	Maximum number of references to other system information blocks.
MaxIntraCells	Maximum number of intra-frequency cells in a measurement control.
MaxInterCells	Maximum number of inter-frequency cells in a measurement control
MaxInterSysCells	Maximum number of inter-system cells in a measurement control.

10.1.6.54.14 System Information Block type 12

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

~~Area scope: cell~~

~~UE mode: connected mode~~

Information Element	Presence	Range	IE type and reference	Semantics description
~~Other information elements~~				
~~Value tag~~	~~M~~			
References to other system information blocks		0 .. <maxSysInfoBlockcount>		
~~SIB type~~	~~M~~			
~~Value tag~~	~~C – Blocktype~~			
Scheduling information	M			
Measurement information elements				
Measurment control information		1 .. <maxMeasurementTypecount>		
Measurement Identity Number	M			
Measurement Type	M			
CHOICE Measurement				
Intra-frequency	C – Intrafreq			
Intra-frequency cell info	~~O~~	0 .. <MaxIntraCells>		
Intra-frequency Measurement quantity	O			
Intra-frequency Reporting quantity for RACH reporting	O			
Maximum number of Reported cells on RACH	O			
Intra-frequency reporting Quantity	O			
Inter-frequency	C - Interfreq			
Inter-frequency cell Info	~~O~~	0 .. <MaxInterCells>		
Inter-frequency Measurement quantity	O			
Inter-system	C - Intersys			
Inter-system cell info	~~O~~	0 .. <MaxInterSysCells>		
Inter-system measurement quantity	O			
Traffic volume				
Traffic volume measurement objects	M			
Traffic volume measurement quantity	M			
UE Internal				
UE internal measurement quantity	M			

Condition	Explanation
Measurement	The choice shall be consistent (same name) with the value of the 'Measurement type' IE

Intersys	Measurement type = Inter system measurement
Interfreq	Measurement type = Inter frequency measurement
Intrafreq	Measurement type = Intra frequency measurement
~~*Blocktype*~~	~~The presence of this IE depends on the value of the preceding SIB type. This IE is mandatory if the specification of the SIB of that SIB type includes as first IE a Value tag IE.~~

Range Bound	**Explanation**
MaxMeasTypeCount	Maximum number of measurement types
MaxSysInfoBlockcount	Maximum number of references to other system information blocks.
MaxIntraCells	Maximum number of intra-frequency cells in a measurement control.
MaxInterCells	Maximum number of inter-frequency cells in a measurement control
MaxInterSysCells	Maximum number of inter-system cells in a measurement control.

Option	**Default value**
All optional elements	If not present, the value shall be assumed to be that indicated for in idle mode in SIB 11.

10.1.6.5.15 System Information Block type 13

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

Information Element	Presence	Range	IE type and reference	Semantics description
Other information elements				
References to other system information blocks		0 .. <maxSysInfoBlockcount>		
Scheduling information	M			
CN Information Elements				
CN information		1 to <maxCNdomains>		Send CN information for each CN domain.
CN domain identity	M			
NAS (ANSI-41) system information	M			
CN DRX cycle length	M			
UE Information				
UE timers and counters in idle mode	O			
Capability update requirement	O			

10.1.6.5.15.1 System Information Block type 13.1

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

Information Element	Presence	Range	IE type and reference	Semantics description
ANSI-41 information elements				
ANSI-41 RAND information	M			

10.1.6.5.15.2 System Information Block type 13.2

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

Information Element	Presence	Range	IE type and reference	Semantics description
ANSI-41 information elements				
ANSI-41 User Zone Identification information	M			

10.1.6.5.15.3 System Information Block type 13.3

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

Information Element	Presence	Range	IE type and reference	Semantics description
ANSI-41 information elements				
ANSI-41 Private Neighbor List information	M			

10.1.6.5.15.4 System Information Block type 13.4

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

Information Element	Presence	Range	IE type and reference	Semantics description
ANSI-41 information elements				
ANSI-41 Global Service Redirection information	M			

10.1.6.6.16 System Information Block type 14 (TDD)

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

Information Element	Presence	Range	IE type and reference	Semantics description
Other information elements				
References to other system information blocks		0 .. <maxSysInfoBlockcount>		
Scheduling information	M			
PhyCH information elements				
Primary CCPCH Tx Power	O			For path loss calculation
Individual Timeslot Info		1 to ….<maxTScount>~~14~~		
Timeslot	M			
UL Interference	M			UL Timeslot Interference
RACH Constant Value	O			Operator controlled RACH ~~UL~~ Margin
DPCH Constant Value	O			Operator controlled UL DPCH Margin
USCH Constant Value	O			Operator controlled USCH Margin

Range Bound	Explanation
maxTScount	Maximum number of timeslots

10.2.6.9 Uplink DPCH power control info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE *mode*				
FDD				
Constant value				Necessity is ffs
UL interference				Necessity is ffs
TPC step size	M		Enumerated (1dB, 2dB)	
TDD				
UL Maximum SIR	M		Enumerated (.1dB steps)	Maximum UE transmit power limit
UL target SIR	O~~M~~			~~Necessity is ffs~~
UL Minimum SIR	O			~~Necessity is ffs~~
~~Constant value~~				
~~UL interference~~				
~~TCP step size~~	~~M~~		~~Enumerated (1dB,2dB,3dB)~~	

10.2.6.7 PRACH power control info

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~UL interference~~	~~M~~			
~~Constant value~~	~~M~~			
CHOICE *mode*				
FDD				
Primary CPICH DL TX power	M			
UL interference	M			
Constant Value	M			
Power offset• • P_0	M			Power step when no acquisition indicator is received
Power offset• • P_1	M			Power step when negative acquisition is received
Power offset• • $P_{p\text{-}m}$	M			Power offset between preamble and the message part
~~TDD~~				
~~Primary CCPCH DL Tx power~~	~~M~~			

10.2.6.30 PUSCH power control info (TDD only)

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
UL Maximum SIR	M		Enumerated (.1dB steps)	Maximum UE transmit power limit
UL target SIR	~~M~~O			
UL Minimum SIR	O			

10.2.3.1 Uplink access control info

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Access Service class	M	1 to 8		
- PRACH partitioning	M			Mapping to a subset of the available access slots and signatures
-- Available signature Start Index			Integer(0..15)	
-- Available signature End Index			Integer(0..15)	
-- Available sub-channel Start Index			Integer(0..11)	
-- Available sub-channel End Index			Integer(0..11)	
Dynamic persistence level	M			FFS

PRACH partitioning:

The list of available signatures is renumbered from signature index 0 to signature index N-1, where N is the number of available signatures, starting with the lowest available signature number and continuing in sequence, in the order of increasing signature numbers.

- List of available signatures : 16 or less signatures are available.

Ex : only signatures 0, 5, 10 and 15 are available, then :

Signature 0 is : available signature index 0

Signature 5 is : available signature index 1

Signature 10 is : available signature index 2

Signature 15 is : available signature index 3

The list of available access slot sub-channels is renumbered from access slot sub-channel index 0 to access slot sub-channel index M-1, where M is the number of available access slot sub-channels, starting with the lowest available access slot sub-channel number and continuing in sequence, in the order of increasing access slot sub-channel numbers.

- List of available Access Slot channels : 12 or less sub-channels are available.

Ex : only sub-channels 0,1 ; 4,5 ; 8,9 are present, then :

Sub-channel 0 is : available sub-channel index 0

Sub-channel 1 is : available sub-channel index 1

Sub-channel 4 is : available sub-channel index 2

Sub-channel 5 is : available sub-channel index 3

Sub-channel 8 is : available sub-channel index 4

Sub-channel 9 is : available sub-channel index 5

One ASC has access to all the access slot sub-channels between the Available sub-channel Start Index and the Available sub-channel End Index, and to all the signatures between the Available signature Start Index and the Available signature End Index.

~~<Note: The above text may eventually be moved to a more appropriate location>~~

10.2.3.27 UE Timers and Counters in idle mode

This information element indicates timers and maximum values of each counter used by the idle mode~~in~~ UE.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
T300	M			
N300	M			
~~T307~~	~~M~~			
~~T302~~	~~M~~			
~~T303~~	~~M~~			
~~N303~~	~~M~~			
~~N303~~	~~M~~			

10.2.3.27a UE Timers and Counters in connected mode

This information element indicates timers and maximum values of each counter used by the connected mode UE.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
T307	M			
T302	M			
T303	M			
N303	M			
N303	M			

10.2.3.32 PRACH partitioning

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Access Service class		1 to 8		
Available signature Start Index	M		Integer(0..15)	
Available signature End Index	M		Integer(0..15)	
Available sub-channel Start Index	M		Integer(0..11)	
Available sub-channel End Index	M		Integer(0..11)	

PRACH partitioning:

The list of available signatures is renumbered from signature index 0 to signature index N-1, where N is the number of available signatures, starting with the lowest available signature number and continuing in sequence, in the order of increasing signature numbers.

- List of available signatures : 16 or less signatures are available.

Ex : only signatures 0, 5, 10 and 15 are available, then :

Signature 0 is : available signature index 0

Signature 5 is : available signature index 1

Signature 10 is : available signature index 2

Signature 15 is : available signature index 3

The list of available access-slot sub-channels is renumbered from access-slot sub-channel index 0 to access-slot sub-channel index M-1, where M is the number of available access-slot sub-channels, starting with the lowest available access-slot sub-channel number and continuing in sequence, in the order of increasing access-slot sub-channel numbers.

- List of available Access Slot channels : 12 or less sub-channels are available.

Ex : only sub-channels 0,1 ; 4,5 ; 8,9 are present, then :

Sub-channel 0 is : available sub-channel index 0

Sub-channel 1 is : available sub-channel index 1

Sub-channel 4 is : available sub-channel index 2

Sub-channel 5 is : available sub-channel index 3

Sub-channel 8 is : available sub-channel index 4

Sub-channel 9 is : available sub-channel index 5

One ASC has access to all the access-slot sub-channels between the Available sub-channel Start Index and the Available sub-channel End Index, and to all the signatures between the Available signature Start Index and the Available signature End Index.

<Note: The above text may eventually be moved to a more appropriate location>

10.2.3.33 Dynamic persistence level

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Dynamic persistence level	M			

10.2.3.34 Primary CPICH DL Tx power

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Primary CPICH DL Tx power	M			

10.2.3.35 Constant value

This constant value is used by the UE to calculate the initial output power on PRACH according to the Open loop power control procedure.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Constant value	M			

10.2.3.36 PRACH power offset

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Power offset P0	M			Power step when no acquisition indicator is received.
Power offset P1	M			Power step when negative acquisition is received
Power offset P p-m	M			Power offset between preamble and the message part

10.2.3.37 UL interference

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
UL interference	M			

10.2.6.9 Uplink DPCH power control info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE *mode*				
FDD				
Constant value				Necessity is ffs
UL interference				Necessity is ffs
TPC step size	M		Enumerated (1dB, 2dB)	
TDD				
UL Maximum SIR	M		Enumerated (.1dB steps)	Maximum UE transmit power limit
UL target SIR	O~~M~~			~~Necessity is ffs~~
UL Minimum SIR	O			~~Necessity is ffs~~
~~Constant value~~				
~~UL interference~~				
~~TCP step size~~	~~M~~		~~Enumerated (1dB,2dB,3dB)~~	

10.2.6.7 PRACH power control info

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~UL interference~~	~~M~~			
~~Constant value~~	~~M~~			
CHOICE *mode*				
FDD				
Primary CPICH DL TX power	M			
UL interference	M			
Constant Value	M			
Power offset• • P_0	M			Power step when no acquisition indicator is received
Power offset• • P_1	M			Power step when negative acquisition is received
Power offset• • $P_{p\text{-}m}$	M			Power offset between preamble and the message part
~~TDD~~				
~~Primary CCPCH DL Tx power~~	~~M~~			

10.2.6.30 PUSCH power control info (TDD only)

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
UL Maximum SIR	M		Enumerated (.1dB steps)	Maximum UE transmit power limit
UL target SIR	~~M~~O			
UL Minimum SIR	O			

10.2.6.X PICH Power offset

This is the power transmitted on the PICH minus power of the Primary CPICH.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
PICH Power offset	M			

10.2.6.X AICH Power offset

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
AICH Power offset	M			

10.2.8.1 BCCH modification info

Indicates modification of the System Information on BCCH.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
MIB Value tag	M		Value tag	
BCCH Modification time	O			

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.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
System type	M		Enumerated (GSM,1..15)	
Message(s)	M	1..<maxInterSysMessages>	Bitstring (1..512)	Formatted and coded according to specification for the indicated system type.

Range Bound	Explanation
MaxInterSysMessages(=4)	Maximum number of Inter System Messages to send

10.2.8.3 Segment index

Each system information segment has an individual segment index.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Segment index	M		Integer (0..31)	Segments of a system information block are numbered starting with 0 for the first part.

10.2.8.4 SIB data

Contains the result of the IE 'SIB Content' after segmentation.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
SIB data	M		Bit string (size (1..MaxLength))	

It is an acceptable constraint that the 'SIB data' fills always the transport block when appearing as the last IE in a transport block.

10.2.8.5 SI Padding

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Padding	M		Bit string (size (1..MaxLength))	

All the bits of the 'SI Padding' IE shall be set to a fixed value in emission. However, it is not an error for the receiver to receive any other value for those bits.

10.2.8.6 SIB type

The SIB type identifies a specific system information block.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
SIB type	M		Enumerated	

The list of value to encode are :

Master information block,

System Information Type 1,

System Information Type 2,

System Information Type 3,

System Information Type 4,

System Information Type 5,

System Information Type 6,

System Information Type 7

System Information Type 8,

System Information Type 9,

System Information Type 10,

System Information Type 11,

System Information Type 12

10.2.8.7 PLMN Value tag

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
PLMN Value tag	M		Enumerated (1..256)	

10.2.8.7a Cell Value tag

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Cell Value tag	M		Enumerated (1..4)	

10.2.8.7b MIB Value tag

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
MIB Value tag	M		Enumerated (1..8)	

~~10.2.8.8 Expiration time~~

~~Information Element/Group name~~	~~Presence~~	~~Range~~	~~IE type and reference~~	~~Semantics description~~
~~Expiration time~~	~~M~~		~~Integer (0..31)~~	~~The time is expressed in seconds. Expiration time of zero means the UE has to re-read the information upon each usage occasion.~~

10.2.8.9 Scheduling information

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
SIB type	M			
PLMN Value tag	C - Blocktype			~~The value of the 'value tag' IE in the 'scheduling information' IE indicates the value of the 'value tag' IE of the next occurrence of the SIB of SIB type the value of the 'SIB type' IE within the area scope of that SIB.~~
Cell Value tag	C - Blocktype			
Scheduling	O			
> SEG_COUNT	O		SEG_COUNT	
> SIB_REP	M		Integer (16, 32, 64, 128, .. 2048)	Repetition period for the SIB in frames
> SIB_POS	M		Integer (0…Rep-1)	Position of the first segment
> SIB_POS offset info	O			
> > SIB_OFF	M	Segcount-1	Integer (1..32)	Offset of subsequent segments

Condition	Explanation
Blocktype	The presence of this IE depends on the value of the preceding SIB type. This IE is mandatory if the specification of the SIB of that SIB type includes as first IE ~~a~~the corresponding Value tag IE.

Option	Default value
SIB_POS offset info	If the SIB_POS offset info is not present, the receiver shall understand that all segments are consecutive, i.e., that the SIB_OFF would have been 0, 1, 2, …
SEG_COUNT	If not present, the number of segments is one.
Scheduling	If not present, the SIB is not sent in the area scope.

Range Bound	Explanation
Segcount	The value of the SEG_COUNT IE
Rep	The value of the SIB_REP IE

10.2.8.10 SEG COUNT

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
SEG_COUNT	M		Integer (1..32)	Number of segments in the system information block

10.2.8.11 Segment type

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Segment type	M		Enumerated (First segment, Subsequent segment, Last segment, Complete)	

10.2.9 ANSI-41 Information elements

10.2.9.1 NAS (ANSI-41) system information

This Information Element contains ANSI-41 system information.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
NAS (ANSI-41) system information	M		Bit string (size (1..MaxLength))	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

10.2.9.2 ANSI-41 RAND information

This Information Element contains ANSI-41 RAND information.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
ANSI-41 RAND information	M		Bit string (size (1..MaxLength))	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

10.2.9.3 ANSI-41 User Zone Identification information

This Information Element contains ANSI-41 User Zone Identification information.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
ANSI-41 User Zone Identification information	M		Bit string (size (1..MaxLength))	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

10.2.9.4 ANSI-41 Private Neighbor List information

This Information Element contains ANSI-41 Private Neighbor List information.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
ANSI-41 Private Neighbor List information	M		Bit string (size (1..MaxLength))	Formatted and coded according to the 3GPP2 document "G3G CDMA DS on ANSI-41"

10.2.9.5 ANSI-41 Global Service Redirection information

This Information Element contains contains ANSI-41 Global Service Redirection information.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
ANSI-41 Global Service Redirection information	M		Bit string (size (1..MaxLength))	Formatted and coded according to the 3GPP2 document “G3G CDMA DS on ANSI-41”

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

Document (R2-99k33)
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	012r2	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 2nd Dec 1999

Subject: Inter-frequency measurements and reporting

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: There is a need for specifying Inter-frequency measurements and events in UTRAN and removal of FFS.

Clauses affected: 10.2.7.14, 10.2.7.21, 10.2.7.26, 10.2.7.33

New clauses:
14.x Inter-frequency measurements

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

←<-------- double-click here for help and instructions on how to create a CR.

10.2.7.14 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.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE *mode*				
FDD				
CHOICE *reporting criteria*				
Intra-frequency measurement quantity	M		Enumerated(CPICH Ec/N0, CPICH RSCP, CPICH SIR, Pathloss, UTRA Carrier RSSI)	Pathloss=Primary CPICH Tx power-CPICH RSCP CPICH SIR is FFS
Measurement quantity for frequency quality estimate	M		Enumerated(CPICH Ec/N0, CPICH RSCP)	
TDD				
CHOICE *reporting criteria*				
Intra-frequency measurement quantity	M		Enumerated(Primary CCPCH RSCP, Pathloss, UTRA carrier RSSI)	Pathloss=Primary CCPCH Tx power-Primary CCPCH RSCP
Measurement quantity for frequency quality estimate			Enumerated(Primary CCPCH RSCP)	
~~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~~			

CHOICE *reporting criteria*	**Condition under which the given *reporting criteria* is chosen**
Intra-frequency measurement quantity	Used when intra-frequency measurement reporting criteria is used for this measurement
Measurement quantity for frequency quality estimate	Used when inter-frequency measurement reporting criteria is used for this measurement

10.2.7.21 Inter-frequency reporting quantity ~~(FFS)~~

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~Measured time difference to cell~~	~~O~~			
SFN-SFN observed time difference	M		Boolean	Note 1
Cell Identity	M		Boolean	
UTRA Carrier RSSI	M		Boolean	
Frequency quality estimate	M		Boolean	
CHOICE *mode*				
FDD				
CPICH Ec/N0	M		Boolean	
CPICH RSCP	M		Boolean	
Pathloss	M		Boolean	
CFN-SFN observed time difference	M		Boolean	Note 1
TDD				
Primary CCPCH ~~R_x~~ RSCP	~~O~~M		Boolean	
~~E_c/N_0 of Primary CCPCH~~	~~O~~			

Note 1 Feasability of performing these measurements with compressed mode is unclear.

10.2.7.26 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.~~

~~Information Element/Group name~~	~~Presence~~	~~Range~~	~~IE type and reference~~	~~Semantics description~~

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

Event 2a: Change of best frequency.

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

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

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

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

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

Information Element/Group name	**Presence**	**Range**	**IE type and reference**	**Semantics description**
Parameters required for each event		0 to <maxEvent count>		
Event ID	M		Enumerated (2a, 2b, 2c, 2d, 2e, 2f)	
Treshold used frequency	C – clause 0			
W used frequency	C – clause 0		Enumerated(0, 0.1..2.0)	Granularity 0.1
Hysteresis	M		Enumerated(0, 0.5..14.5)	In event 2a, 2b, 2c, 2d, 2e, 2f Granularity 0.5 dB
Time to trigger	M		Enumerated(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms.
Amount of reporting	M		Enumerated(1, 2, 4, 8, 16, 32, 64,	
Reporting interval	M		Enumerated(0, 0.25, 0.5, 1, 2, 4, 8, 16)	Indicates the interval of periodical reporting when such reporting is triggered by an event. A zero value indicates that event triggered periodical reporting shall not be applied. Interval in seconds
Parameters required for each non-used frequency		**0 to <maxNon usedfrequ ency>**		
Threshold non used frequency	C – clause 1			
W non-used frequency	**C-clause 1**		Enumerated(0, 0.1..2.0)	Granularity 0.1

Condition	Explanation
Clause 0	This parameter is only sent in event 2a,2b, 2d,, 2f
Clause 1	This parameter is only sent in event 2a, 2b, 2c, 2e

10.2.7.33 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.~~

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Event ID	M			
Frequency info				
Choice mode				
FDD				
Primary CPICH info	O			
TDD				
Primary CCPCH info	O			

14 Specific functions

14.X Inter-frequency measurements

The frequency quality estimate used in events 2a, 2b 2c, 2d and 2e is defined as

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = W_j \cdot 10 \cdot Log\left(\sum_{i=1}^{N_{A\,j}} M_{i\,j}\right) + (1 - W_j) \cdot 10 \cdot LogM_{Best\ j},$$

The variables in the formula are defined as follows:

$Q_{frequency\ j}$ is the estimated quality of the active set on frequency j

$M_{frequency\ j}$ is the estimated quality of the active set on frequency j.

$M_{i\,j}$ is a measurement result of cell i in the active set on frequency j.

$N_{A\,j}$ is the number of cells in the active set on frequency j.

$M_{Best\ j}$ is the measurement result of the strongest cell in the active set on frequency j

W_j is a parameter sent from UTRAN to UE and used for frequency j

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99k35)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	013r1	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2	**Date:**	2nd Dec 1999		
Subject:	Inter-system measurements and reporting				
Work item:					

Category: *(only one category shall be marked with an X)*				**Release:**		
	F	Correction			Phase 2	
	A	Corresponds to a correction in an earlier release			Release 96	
	B	Addition of feature	X		Release 97	
	C	Functional modification of feature			Release 98	
	D	Editorial modification			Release 99	X
					Release 00	

Reason for change:	There is a need for specifying Inter-System measurements and events in UTRAN and remove remaining FFS.
Clauses affected:	10.2.7.15, 10.2.7.22, 10.2.7.27, 10.2.7.34 New clause: 14.x Inter-system measurements

Other specs affected:				
	Other 3G core specifications		→ List of CRs:	
	Other GSM core specifications		→ List of CRs:	
	MS test specifications		→ List of CRs:	
	BSS test specifications		→ List of CRs:	
	O&M specifications		→ List of CRs:	

Other comments:	

help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.2.7.15 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.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE mode				
FDD				
Measurement quantity for UTRAN quality estimate	M		Enumerated(CPICH Ec/I0, CPICH RSCP)	
TDD				
Measurement quantity for UTRAN quality estimate	M		Enumerated(Primary CCPCH RSCP)	
CHOICE *system*				
GSM				
Measurement quantity	M		Enumerated(GSM Carrier RSSI, Pathloss)	
BSIC verification required	M		Boolean	Note 1
~~E_c/I_0~~	~~O FFS~~			~~One of these is mandatory~~
~~Signal strength~~	~~O~~			
~~Path loss~~	~~O FFS~~			
~~Colour code~~	~~C - GSM~~			

Note 1 The possibility to use this IE is dependant on comments from SMG2.
Also, this IE must be set to "true" if IE "Observed time difference to GSM cell" in IE "Inter-system measurement reporting quantity "is set to "true".

CHOICE *system*~~Condition~~	**Condition under which the given *system* is chosen~~Explanation~~**
GSM	~~This information element is only sent~~Used when the system being measured is a GSM system

10.2.7.22 Inter-system reporting quantity ~~(FFS)~~

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
UTRAN estimated quality	M		Boolean	
CHOICE *system*				
GSM				
Pathloss	M		Boolean	
Observed time difference to GSM cell	M		Boolean	
~~RSS I on BCCH carrier~~GSM Carrier RSSI	M		Boolean	
BSIC	M		Boolean	

CHOICE *system*	**Condition under which the given *system* is chosen**
GSM	Used when the system being measured is a GSM system

10.2.7.27 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.~~

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

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

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

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

Event 3d: Change of best cell in other system

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Parameters required for each event		0 to <maxEvent count>		
Event ID	M		Enumerated (3a, 3b, 3c, 3d)	
Treshold own system	C – clause 0			
W	C – clause 0			In event 3a
Threshold other system	C – clause 1			In event 3a, 3b, 3c
Hysteresis	M			
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			
Reporting interval	M			Indicates the interval of periodical reporting when such reporting is triggered by an event. A zero value indicates that event triggered periodical reporting shall not be applied.

Condition	Explanation
Clause 0	This parameter is only sent in event 3a
Clause 1	This parameter is only sent in event 3a, 3b and 3c

10.2.7.34 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.~~

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Event ID	M			
CHOICE *system*				
GSM	C-GSM			
Frequency	M			
BSIC	M			

Condition	Explanation
GSM	This information element is only sent when the system being measured is a GSM system

14 Specific functions

14.X Inter-system measurements

The estimated quality of the active set in UTRAN in events 3a is defined as

$$Q_{UTRAN} = 10 \cdot LogM_{UTRAN} = W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best},$$

The variables in the formula are defined as follows:

Q_{UTRAN} is the estimated quality of the active set on the currently used UTRAN frequency

M_{UTRAN} is the estimated quality of the active set on currently used UTRAN frequency expressed in another unit.

M_i is a measurement result of cell i in the active set.

N_A is the number of cells in the active set.

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

W is a parameter sent from UTRAN to UE

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99h14)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	014r1	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2	**Date:**	29th Nov 1999		
Subject:	Additional measurements in RRC measurement messages				
Work item:					

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: There is a need for several RRM functions in UTRAN to have additional measurements attached to another primary measurement. Also some remaining FFS are removed. Details are discussed in TSGR2#8(99)e62.

Clauses affected: 8.4.1.3, 8.4.2.2, 10.1.2.1, 10.2.7.19, 10.2.7.23, 10.2.7.24
New clause:
10.2.7.x UE Internal reporting quantity

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:


help.doc

←<-------- double-click here for help and instructions on how to create a CR.

8.4.1.3 Reception of MEASUREMENT CONTROL by the UE

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in 8.5.7 unless otherwise specified below.

The UE shall

- Read the IE "Measurement command"

If the IE "measurement command" has the value "setup", the UE shall

- Store this measurement in the variable MEASUREMENT_IDENTITY according to the IE "measurement identity number"
- Store into the the variable MEASUREMENT_IDENTITY the control information defined by IEs "Measurement object", the IE "Measurement quantity", the IE "Reporting quantity", the IE "Measurement reporting criteria", ~~and~~ the IE "Reporting mode" and if present all IEs "Additional measurement identity number", which are valid for this measurement type and
- Begin measurements according to the stored control information for this measurement identity number

See chapter 14 for detailed description of a measurement object, measurement quantity and measurement reporting criteria for the different types of measurements.

If the IE "Measurement command has the value "modify", the UE shall

- Retrieve the stored measurement information associated with the identity indicated in the IE "measurement identity number"
- If any of the IEs "measurement object", IE "measurement quantity", IE "reporting quantity", IE "measurement reporting criteria", ~~or~~IE "reporting mode" or IE "Additional measurement identity number" are present in the MEASUREMENT CONTROL message, the control information defined by that IE shall replace the corresponding stored information.
- Store the new set of IEs and associate them with the measurement identity number and
- Resume the measurements according to the new stored measurement control information

If the IE "measurement command has the value "release", the UE shall

- Terminate the measurement associated with the identity given in the IE "measurement identity number"
- Clear all stored measurement control information associated to this measurement identity number.

After the above actions have been performed, the procedure is complete.

8.4.2.2 Initiation

In CELL_DCH state The UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in the variable MEASUREMENT_IDENTITY are fulfilled for any ongoing measurements which are being performed in the UE.

In CELL_FACH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are fulfilled for an ongoing traffic volume measurement which is being performed in the UE.

In CELL_PCH or URA_PCH state, the UE shall first perform the cell update procedure in order to transit to CELL_FACH state and then transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are fulfilled for an ongoing traffic volume measurement which is being performed in the UE.

Criteria are fulfilled if either

- The time indicated in the stored IE “Periodical reporting” has elapsed since a given measurement was either initiated or since the last measurement report related to this measurement was transmitted.
- An event in stored IE “Measurement reporting criteria” was triggered. Events and triggering of reports for different measurement types are described in detail in chapter 14.

The UE shall transmit the MEASUREMENT REPORT message using either AM or UM RLC according to the stored IE “measurement reporting mode” associated with the measurement identity number that triggered the report.

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

- Set the IE “measurement identity number “ to the measurement identity number which is associated with that measurement in variable MEASUREMENT_IDENTITY
- Set the IE “measured results” to include measurements according to the IE “reporting quantity“ of that measurement stored in variable MEASUREMENT_IDENTITY
- Set the IE “Measured results” in the IE “Additional measured results” according to the IE “reporting quantity” for all measurements associated with the measurement identities included in the IE “additional measurements” stored in variable MEASUREMENT_IDENTITY of the measurement that triggered the measurement report. If several additional measured results are to be included, the UE shall sort them in ascending order according to their IE “measurement identity number” in the MEASUREMENT REPORT message.

If the MEASUREMENT REPORT message was triggered by an event (i.e. not a periodical report), the UE shall

- Set the measurement event results according to the event that triggered the report

10.1.2.1 MEASUREMENT CONTROL

<Functional description of this message to be included here>
RLC-SAP: AM
Logical channel: DCCH
Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
Measurement Information elements				
Measurement Identity Number	M			
Measurement Command	M			
Measurement Type	O			
Measurement Reporting Mode	O			
Additional measurement identity number		0 to <MaxAdditionalMeas>		
CHOICE Measurement				
Intra-frequency				
Intra-frequency cell info				Measurement object
Intra-frequency measurement quantity	C event trigger			
Intra-frequency measurement reporting quantity	O			~~Note 1~~
CHOICE report criteria				
Intra-frequency measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Inter-frequency				
Inter-frequency cell info				Measurement object
Inter-frequency measurement quantity	C event trigger			
Inter-frequency measurement reporting quantity	O			~~Note 1~~
Inter-frequency set Update				
CHOICE report criteria				
Intra-frequency measurement reporting criteria				
Inter-frequency measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Inter-system				
Inter-system cell info				Measurement object
Inter-system measurement quantity	C event trigger			
Inter-system measurement reporting quantity	O			~~Note 1~~
CHOICE report criteria				
Inter-system measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Traffic Volume				
Traffic volume measurement Object				
Traffic volume measurement quantity	C event trigger			
Traffic volume measurement reporting quantity	O			~~Note 1~~
CHOICE report criteria				
Traffic volume measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Quality				

Quality measurement Object				
Quality measurement quantity	C event trigger			
Quality measurement reporting quantity	O			~~Note 1~~
CHOICE report criteria				
Quality measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
UE internal				
UE internal measurement quantity	C event trigger			
UE internal measurement reporting quantity	O			~~Note 1~~
CHOICE report criteria				
UE internal measurement reporting criteria				
Periodical reporting				
No reporting			NULL	

Condition	**Explanation**
event trigger	This element is only included in the message which is sent in event trigger reporting mode.

CHOICE *Measurement*	**Condition under which the given *Measurement* is chosen**
intra-frequency	if measurement type=Intra-frequency measurement
inter-frequency	if measurement type=Inter-frequency measurement
inter-system	if measurement type=Intra-system measurement
traffic volume	if measurement type=traffic volume measurement
Quality	if measurement type=Quality measurement
UE internal	if measurement type=UE internal measurement
CHOICE *reporting criteria*	**Condition under which the given *reporting criteria* is chosen**
******* measurement reporting criteria	Chosen when event triggering is required
Periodical reporting	Chosen when periodical reporting is required
No reporting	Chosen when this measurement only is used as additional measurement to another measurement

Range Bound	**Explanation**
MaxAdditionalMeas	Maximum number of additional measurements for a given measurement identity

~~Note 1: It is FFS whether it is necessary to separate the reporting quantity for each type.~~
~~Note 2: The network may order the UE to report other measurements when UE internal measurements are reported~~

10.1.2.3 MEASUREMENT REPORT

<Functional description of this message to be included here>
RLC-SAP: AM or UM
Logical channel: DCCH
Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
Measurement Information Elements				
Measurement report information		1 to <maxMeas RepCount>		Send Measurement Report information for each measurement report in the message (Note 1)
Measurement identity number	M			
Measured Results	C MR required			
Additional Measurered results		0 to <MaxAdditionalMeas>		
Measured Results	M			
CHOICE event result	C event trigger			Note 1,2
Intra-frequency measurement event results				
Inter-frequency measurement event results				
Inter-system measurement event results				
Traffic volume measurement event results				
Quality measurement event results				

Condition	Explanation
event trigger	This element is only included in the message which is sent in event trigger reporting mode.
MR required	This information element is included by the sender only if indicated optionally by Reporting Quantity in Measurement Control

Range Bound	Explanation
MaxMeasRepCount	Maximum number of Measurement reports in a message
MaxAdditionalMeas	Maximum number of additional measurements for a given measurement identity

CHOICE *event result*	Condition under which the given *event result* is chosen
intra-frequency measurement event results	
inter-frequency measurement event results	
inter-system measurement event results	
traffic volume measurement event results	
Quality measurement event results	

Note 1: Whether it is possible to send multiple measurement results that are identified by different measurement identity

numbers in the same Measurement Report is FFS. An alternative solution is to allowt 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.

10.2.7.19 Intra-frequency reporting quantity

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
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~~			
~~DL Transport CH BER~~	~~O~~			~~FFS~~
~~UE Transmission Power~~	~~O~~			
~~UE Position~~	~~O~~			
Cell ID	O			FFS
CHOICE *mode*				
TDD				
DL CCTrCH SIR				
DL Timeslot ISCP				

~~(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 Traffic volume reporting quantity

Contains the reporting quantity information for a traffic volume measurement.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
RLC buffer payload for each RB	O			
Average RLC buffer payload for each RAB	O			
Variance of RLC buffer payload for each RAB	O			
Event type on each Transport channel	O			Indicates overflow or underflow
~~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.~~

10.2.7.24 Quality reporting quantity ~~(FFS)~~

Information Element/Group name	**Presence**	**Range**	**IE type and reference**	**Semantics description**
DL Transport Channel BLER for each transport channel	M		Boolean	
DL Physical channel BER	M		Boolean	
SIR	M		Boolean	

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

10.2.7.X UE Internal reporting quantity

Information Element/Group name	**Presence**	**Range**	**IE type and reference**	**Semantics description**
UE Transmitted Power	M		Boolean	
UE Position	M		Boolean	

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

Document (R2-99j78)
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	015r3	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: TSG-RAN WG2 **Date:** 2nd Dec 1999

Subject: Value range for Measurement Information Elements

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2		
A	Corresponds to a correction in an earlier release			Release 96		
B	Addition of feature	X		Release 97		
C	Functional modification of feature			Release 98		
D	Editorial modification			Release 99	X	
				Release 00		

Reason for change:

This Proposed CR is an update of CR 015 rev1, rev2.

Clarification and modifications to align the message description and the measurement concept description in the current specification. Removal of some remaining FFS.

Most important changes:

- Value ranges and precence added for Measurement information elements
- Alignment of names with the RAN decision on naming of measurements
- Use RLC concatenation when several measurement results with different measurement identities are to be sent simultaneously from the UE to UTRAN
- Clarification for use of CPICH info and Primary CCPCH info in measurements
- Update of IE “Measured Results”
- Measured results IE to be sent on RACH added and renamed to “Measured results on RACH”

Clauses affected:

8.1.8.2, 8.4, 8.4.1, 8.4.2, 10.1.1.4, 10.1.2.1, 10.1.2.3, 10.1.4.3, 10.1.4.6, 10.1.7.4, 10.1.5.19, 10.1.6.4.12, 10.2.7, 14.1.1, 14.1.2.1, 14.1.2.2, 14.7
New sections:
8.4.1.6 to 8.4.1.9
8.5.7.7.1
10.2.7.x UE Internal reporting quantity
10.2.7.x Primary CPICH Tx power (FDD only)
10.2.7.x Primary CCPCH Tx power (TDD only)
10.2.7.x Measured results on RACH
10.2.7.x SFN-SFN Observed time difference
10.2.7.x Measurement validity

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:	

help.doc

<---------- double-click here for help and instructions on how to create a CR.

8.1.8.2 Initiation of direct transfer procedure in the UE

In the UE, the direct transfer procedure shall be initiated, when the upper layers request a transfer of a NAS message. The UE shall transmit the DIRECT TRANSFER message on the uplink DCCH using AM RLC.
The UE shall set IE"CN domain identity" to indicate which CN node the NAS message is destined to.

In, CELL_FACH state, the UE shall include IE"Measured results on RACH" into the DIRECT TRANSFER message, if the message is sent to establish a signalling connection and if RACH measurement reporting has been requested in the IE “Intra-frequency reporting quantity for RACH reporting” and the IE “Maximum number of reported cells on RACH” in system information block type 12.

8.4 Measurement procedures

The UE measurements are grouped into 6 different categories, according to what the UE should measure.

- The different types of measurements are:**Intra-frequency measurements**: measurements on downlink physical channels at the same frequency as the active set. Detailed description is found in subclause 14.1.
- **Inter-frequency measurements**: measurements on downlink physical channels at frequencies that differ from the frequency of the active set.
- **Inter-system measurements**: measurements on downlink physical channels belonging to another radio access system than UTRAN, e.g. PDC or GSM.
- **Traffic volume measurements**: measurements on uplink traffic volume. Detailed description is found in subclause 14.2.
- **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. Detailed description is found in subclause 14.3.

The same type of measurements may be used as input to different functions in UTRAN. However, the UE shall support a number of measurements running in parallel. The UE shall also support that each measurement is controlled and reported independently of every other measurment.

Cells that the UE is monitoring (e.g. for handover measurements) are grouped in the UE into two different categories:

1. Cells, which belong to the **active set.** User information is sent from all these cells and they are simultaneously demodulated and coherently combined. In FDD, these cells are involved in soft handover. In TDD the active set always comprises of one cell only.
2. Cells, which are not included in the active set, but are monitored according to a neighbour list assigned by the UTRAN belong to the **monitored set.**

UTRAN may start a measurement in the UE by transmitting a MEASUREMENT CONTROL message. This message includes the following measurement control information:

1. **Measurement type**: One of the types listed above describing what the UE shall measure.
2. **Measurement identity number**: A reference number that should be used by the UTRAN when modifying or releasing 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 defined measurement, e.g. to change the reporting criteria.
   - Release: Stop a measurement and clear all information in the UE that are related to that measurement.
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. **Reporting quantities:** The quantities the UE shall include in the report in addition to the quantities that are mandatory to report for the specific event.
7. **Measurement reporting criteria**: The triggering of the measurement report, e.g. periodical or event-triggered reporting. The events are described for each measurement type in chapter 14.
8. **Reporting mode**: This specifies whether the UE shall transmit the measurement report using acknowledged or unacknowledged data transfer of RLC.

All these measurement parameters depend on the measurement type and are described in more detail in chapter 14.
When the reporting criteria are fulfilled, i.e. a specified event occurred or the time since last report indicated for periodical reporting has elapsed, the UE shall send a MEASUREMENT REPORT message to UTRAN.
In idle mode, the UE shall perform measurements according to the measurement control information included in System Information Block Type 11, which is transmitted on the BCCH.
In CELL_FACH, CELL_PCH or URA_PCH state, the UE shall perform measurements according to the measurement control information included in System Information Block Type 12, which is transmitted on the BCCH. If the UE has not received System Information Block Type 12, it shall perform measurements according to the measurement control information included in System Information Block Type 11, which is transmitted on the BCCH.
In CELL_DCH state, 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 (FDD) or to

support the DCA algorithm (TDD), 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 message sent to establish an RRC connection.
- RRC CONNECTION RE-ESTABLISHMENT REQUEST message sent to re-establish an RRC connection.
- DIRECT TRANSFER message sent uplink to establish a signalling connection.
- CELL UPDATE message sent to respond to a UTRAN originated page.
- MEASUREMENT REPORT message sent to report uplink traffic volume.
- CAPACITY REQUEST message sent to request PUSCH capacity (TDD only)

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

8.4.1 Measurement control

Figure 1. Measurement Control, normal case

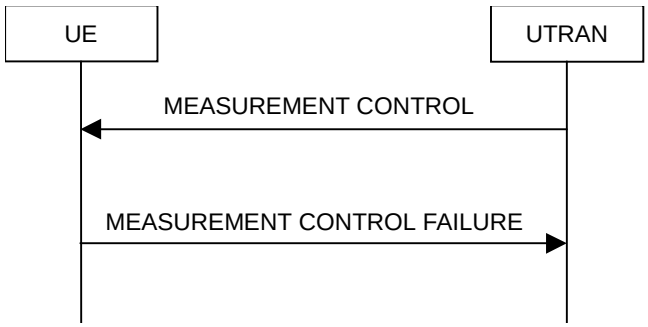


Figure 2. Measurement Control, UE reverts to old measurements

8.4.1.1 General

The purpose of the measurtement control procedure is to Setup, modify or release a measurement in the UE.

8.4.1.2 Initiation

The UTRAN may request a measurement in the UE to be setup, modified or released with a MEASUREMENT CONTROL message, which is transmitted on the downlink DCCH using AM RLC.

When a new measurement is setup, UTRAN should set the IE “Measurement identity number” to a value, which is not used for other measurements.

UTRAN should take the UE capabilities into account when a measurement is assigned to the UE.

8.4.1.3 Reception of MEASUREMENT CONTROL by the UE

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specifed in 8.5.7 unless otherwise specified below.

The UE shall

- Read the IE “Measurement command”

If the IE “measurement command” has the value “setup”, the UE shall

- Store this measurement in the variable MEASUREMENT_IDENTITY according to the IE “measurement identity number”
- Store into the variable MEASUREMENT_IDENTITY the control information defined by IE “Measurement object”, the IE“Measurement quantity”, the IE “Reporting quantity”, the IE “Measurement reporting criteria”, the IE "Measurement validity" and the IE “Reporting mode”, which are valid for this measurement type and
- Begin measurements according to the stored control information for this measurement identity number

See chapter 14 for detailed description of a measurement object, measurement quantity and measurement reporting criteria for the different types of measurements.

If the IE “Measurement command” has the value “modify”, the UE shall

- Retrieve the stored measurement information associated with the identity indicated in the IE “measurement identity number”
- If any of the IEs “measurement object”, IE “measurement quantity”, IE “reporting quantity”, IE “measurement reporting criteria”, IE "measurement validity" or IE “reporting mode” are present in the MEASUREMENT CONTROL message, the control information defined by that IE shall replace the corresponding stored information.
- Store the new set of IEs and associate them with the measurement identity number and
- Resume the measurements according to the new stored measurement control information

If the IE “measurement command has the value “release”, the UE shall

- Terminate the measurement associated with the identity given in the IE “measurement identity number”
- Clear all stored measurement control information related associated to this measurement identity number.

After the above actions have been performed, the procedure is complete.

8.4.1.4 Unsupported measurement in the UE

If UTRAN instructs the UE to perform a measurement that is not supported by the UE, the UE shall

- Retain the measurement configuration that was valid before the MEASUREMENT CONTROL message was received.
- Transmit a MEASUREMENT CONTROL FAILURE message on the DCCH using AM RLC.

The UE shall set the cause value in IE “failure cause” to “unsupported measurement”.

8.4.1.5 Reception of the MEASUREMENT CONTROL FAILURE message by the UTRAN

When the UTRAN receives a MEASUREMENT CONTROL FAILURE message the procedure ends.

8.4.1.6 Measurements after transition from CELL_DCH to CELL_FACH state

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

Intra-frequency measurement

The UE shall stop intra-frequency type measurement reporting assigned in a MEASUREMENT CONTROL message.

After transition to CELL_FACH state, the UE shall begin monitoring neighbouring cells listed in the "intra-frequency cell info" received in "System Information Block 12" (or "System Information Block 11").

If the UE has no previously assigned, valid intra-frequency measurement for CELL_DCH state, the UE shall store "intra-frequency measurement reporting criteria", from "System Information Block 12" (or "System Information Block 11"), for use after a subsequent transition to CELL_DCH state.

If the UE receives the "Intra-frequency reporting quantity for RACH Reporting" and "Maximum number of Reported cells on RACH" IEs from "System Information Block 12" (or "System Information Block 11"), the UE use this information for reporting measured results in RACH messages.

Inter-frequency measurement

The UE shall stop the inter-frequency type measurement reporting assigned in a MEASUREMENT CONTROL message.

After transition to CELL_DCH state, the UE shall begin monitoring neighbouring cells listed in the "inter-frequency cell info" received in "System Information Block 12" (or "System Information Block 11").

Inter-system measurement

The UE shall stop the inter-system type measurement reporting assigned in a MEASUREMENT CONTROL message.

After transition to CELL_DCH state, the UE shall begin monitoring neighbouring cells listed in the "inter-system" cell info" received in "System Information Block 12" (or "System Information Block 11").

Quality measurement

The UE shall stop the quality type measurement reporting assigned in a MEASUREMENT CONTROL message after transition from CELL_DCH to CELL_FACH state.

UE internal measurement

The UE shall stop the UE internal measurement reporting type of measurement assigned in a MEASUREMENT CONTROL message.

Traffic volume measurement

The UE shall stop or continue traffic volume type measurement reporting assigned in a MEASUREMENT CONTROL message according to the following rules:

- If the IE "measurement validity" for this measurement has been assigned to value "release", the UE shall delete the measurement associated with the variable MEASUREMENT IDENTITY
- If the IE "measurement validity" for the measurement has been assigned to value "resume", and the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall stop measurement reporting and save the measurement associated with the variable MEASUREMENT IDENTITY to be used after the next transition to CELL_DCH state.
- If the IE "measurement validity" for the measurement has been assigned to value "resume", and the IE "UE state for reporting" has been assigned to value "all states", the UE shall continue measurement reporting.
- If the UE has previously stored a measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "all states except CELL_DCH", the UE shall resume this measurement and associated reporting.

If no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_FACH state, the UE shall begin a traffic volume type measurement according to traffic volume measurement type information received in "System Information Block 12" (or "System Information Block 11") .

8.4.1.7 Measurements after transition from CELL_FACH to CELL_DCH state

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

Intra-frequency measurement

If the UE has previously stored an intra-frequency measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting.

If the UE has no previously assigned measurement, it shall continue monitoring the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). If the "intra-frequency measurement reporting criteria" IE was included in "System Information Block 12" (or "System Information Block 11"), the UE shall send the MEASUREMENT REPORT message when reporting criteria are fulfilled. When the UE receives a MEASUREMENT CONTROL message including an intra-frequency measurement type assignment, the UE shall stop monitoring and measurement reporting for the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). It shall also delete the measurement reporting criteria received in in "System Information Block 12" (or "System Information Block 11").

Inter-frequency measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). If the UE has previously stored an inter-frequency measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting.

Inter-system measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency system info" IE in "System Information Block 12" (or "System Information Block 11"). If the UE has previously stored an inter-system measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting.

Traffic volume measurement

The UE shall stop or continue traffic volume type measurement reporting assigned in a MEASUREMENT CONTROL message sent on the FACH according to the following rules:

- If the IE "measurement validity" for this measurement has been assigned to value "release", the UE shall delete the measurement associated with the variable MEASUREMENT IDENTITY

- If the IE "measurement validity" for the measurement has been assigned to value "resume", and the IE "UE state for reporting" has been assigned to value "CELL_FACH", the UE shall stop measurement reporting and save the measurement associated with the variable MEASUREMENT IDENTITY to be used after the next transition to CELL_FACH state.

- If the IE "measurement validity" for the measurement has been assigned to value "resume", and the IE "UE state for reporting" has been assigned to value "all states", the UE shall continue measurement reporting.

If the UE has previously stored a measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting.

If no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_DCH state, the UE shall continue an ongoing traffic volume type measurement, which was assigned in "System Information Block 12" (or "System Information Block 11")

Traffic volume type measurement control parameters assigned in a MEASUREMENT CONTROL message shall always supersede parameters conveyed in "System Information Block 12" (or "System Information Block 11").If the UE receives a MEASUREMENT CONTROL message including an traffic volume measurement type assignment, the UE shall delete the traffic volume measurement control information received in in "System Information Block 12" (or "System Information Block 11").

8.4.1.8 Measurements after transition from idle mode to cell_DCH state

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

Intra-frequency measurement

The UE shall continue monitoring the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). If the "intra-frequency measurement reporting criteria" IE

was included in "System Information Block 12" (or "System Information Block 11"), the UE shall send the MEASUREMENT REPORT message when reporting criteria are fulfilled.

When the UE receives a MEASUREMENT CONTROL message including an intra-frequency measurement type assignment, the UE shall stop monitoring and measurement reporting for the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). It shall also delete the measurement reporting criteria received in in "System Information Block 12" (or "System Information Block 11").

Inter-frequency measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11").

Inter-system measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency system info" IE in "System Information Block 12" (or "System Information Block 11").

Traffic volume measurement

The UE shall begin a traffic volume type measurement, which was assigned in "System Information Block 12" (or "System Information Block 11").

8.4.1.9 Measurements after transition from idle mode to CELL_FACH state

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

Intra-frequency measurement

The UE shall begin monitoring neighbouring cells listed in the "intra-frequency cell info" received in "System Information Block 12" (or "System Information Block 11").

If the UE receives "intra-frequency measurement reporting criteria", from "System Information Block 12" (or "System Information Block 11"), the UE shall store this information to use after a subsequent transition to CELL_DCH state.

If the UE receives the "Intra-frequency reporting quantity for RACH Reporting" and "Maximum number of Reported cells on RACH" IEs from "System Information Block 12" (or "System Information Block 11"), the UE use this information for reporting measured results in RACH messages.

Inter-frequency measurement

The UE shall begin monitoring neighbouring cells listed in the "inter-frequency cell info" received in "System Information Block 12" (or "System Information Block 11").

Inter-system measurement

The UE shall begin monitoring neighbouring cells listed in the "inter-system" cell info" received in "System Information Block 12" (or "System Information Block 11").

Traffic volume measurement

The UE shall begin a traffic volume type measurement according to traffic volume measurement type information received in "System Information Block 12" (or "System Information Block 11").

8.4.2 Measurement report

Figure 3. Measurement report, normal case

8.4.2.1 General

The purpose of the measurement reporting procedure is to transfer measurement results from the UE to UTRAN.

8.4.2.2 Initiation

In CELL_DCH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are fulfilled for any ongoing measurements which are being performed in the UE.

In CELL_FACH state, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are fulfilled for an ongoing traffic volume measurement which is being performed in the UE.

In CELL_PCH or URA_PCH state, the UE shall first perform the cell update procedure in order to transit to CELL_FACH state and then transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT_IDENTITY are fulfilled for an ongoing traffic volume measurement which is being performed in the UE.

Criteria are fulfilled if either

- The time indicated in the stored IE “Periodical reporting” has elapsed a given measurement was either initiated or since the last measurement report related to this measurement was transmitted.
- An event in stored IE “Measurement reporting criteria” was triggered. Events and triggering of reports for different measurement types are described in detail in chapter 14.

The UE shall transmit the MEASUREMENT REPORT message using either AM or UM RLC according to the stored IE “measurement reporting mode” associated with the measurement identity number that triggered the report.

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

- Set the IE “measurement identity number “ to the measurement identity number which is associated with that measurement in variable MEASUREMENT_IDENTITY
- Set the IE “measured results” to include measurements according to the IE “reporting quantity“ of that measurement stored in variable MEASUREMENT_IDENTITY

If the MEASUREMENT REPORT message was triggered by an event (i.e. not a periodical report), the UE shall

- Set the measurement event results according to the event that triggered the report

8.4.2.3 Reception of a MEASUREMENT REPORT message by the UTRAN

When the UTRAN receives the MEASUREMENT REPORT message, the measurement reporting procedure ends.

8.5.7.7 Measurement information elements

8.5.7.7.1 Measurement validity

If the IE "measurement validity" for a given measurement has been assigned to value "release", the UE shall delete the measurement associated with the variable MEASUREMENT IDENTITY after the UE makes a transition to a new state.

If the IE "measurement validity" for this measurement has been assigned to value "resume", the UE shall save the measurement associated with the variable MEASUREMENT IDENTITY .The IE "UE state" defines the scope of resuming the measurement.

If the "UE state" is defined as 'all states', the UE shall continue the measurement after making a transition to a new state. This scope is assigned only for traffic volume type measurements.

If the "UE state" is defined as ' all states except Cell_DCH', the UE shall store the measurement to be resumed after a subsequent transition from CELL_DCH state to any of the other states in connected mode. This scope is assigned only for traffic volume type measurements.

If the "UE state" is defined as ' Cell_DCH', the UE shall store the measurement to be resumed after a subsequent transition to CELL_DCH state. After cell re-selection, the UE shall delete an ongoing measurement intra-frequency or inter-frequency and inter-system type measurement associated with the variable MEASUREMENT IDENTITY. Other measurement types shall, however, be continued regardless of cell reselection.

10.1.1.4 CELL UPDATE

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

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
U-RNTI	M			
Cell update cause	M			
AM_RLC error indication	O			Indicates AM_RLC unrecoverable error occurred on c-plane in the UE
Measurement information elements				
~~Measurement identity number~~				~~Intra-frequency measurement related report~~
~~Measured results~~				
Measured results on RACH	O			

10.1.2 Measurement Messages

10.1.2.1 MEASUREMENT CONTROL

<Functional description of this message to be included here>
RLC-SAP: AM
Logical channel: DCCH
Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
Measurement Information elements				
Measurement Identity Number	M			
Measurement Command	M			
Measurement Type	~~O~~C Setup			
Measurement Reporting Mode	~~O~~C NotRelease			
CHOICE Measurement				
Intra-frequency				
Intra-frequency cell info		1 to <MaxIntraCells>		Measurement object
Intra-frequency measurement quantity	C event trigger			
Intra-frequency measurement reporting quantity	O			Note 1
Maximum number of reporting cells	O			
Measurement validity	O			
CHOICE report criteria				
Intra-frequency measurement reporting criteria				
Periodical reporting criteria				
Inter-frequency				
Inter-frequency cell info		1 to <MaxInterCells>		Measurement object
Inter-frequency measurement quantity	C event trigger			
Inter-frequency measurement reporting quantity	O			Note 1
Maximum number of reporting cells	O			
Measurement validity	O			

Inter-frequency set Update				
CHOICE report criteria				
Intra-frequency measurement reporting criteria				
Inter-frequency measurement reporting criteria				
Periodical reporting criteria				
Inter-system				
Inter-system cell info		1 to <MaxInterSysCells>		Measurement object
Inter-system measurement quantity	C event trigger			
Inter-system measurement reporting quantity	O			Note 1
Maximum number of reporting cells	O			
CHOICE report criteria				
Inter-system measurement reporting criteria				
Periodical reporting criteria				
Traffic Volume				
Traffic volume measurement Object				
Traffic volume measurement quantity	C event trigger			
Traffic volume measurement reporting quantity	O			Note 1
Measurement validity	O			
CHOICE report criteria				
Traffic volume measurement reporting criteria				
Periodical reporting criteria				
Quality				
Quality measurement Object				
Quality measurement quantity	C event trigger			
Quality measurement reporting quantity	O			Note 1
CHOICE report criteria				
Quality measurement reporting criteria				
Periodical reporting criteria				
UE internal				
UE internal measurement quantity	C event trigger			
UE internal measurement reporting quantity	O			Note 1
CHOICE report criteria				
UE internal measurement reporting criteria				
Periodical reporting criteria				

Condition	**Explanation**
Setup	This IE is only included if measurement command is Setup
NotRelease	This IE is only included if measurement command is Setup or Modify

event trigger	This element is only included ~~in the message which~~ if the Reporting mode IE is set to ~~is sent in~~ event trigger reporting mode.

Range Bound	**Explanation**
MaxIntraCells	Maximum number of Intra-frequency cells in a measurement control
MaxInterCells	Maximum number of Inter-frequency cells in a measurement control
MaxInterSysCells	Maximum number of Inter-System cells in a measurement control

CHOICE *Measurement*	**Condition under which the given *Measurement* is chosen**
intra-frequency	if measurement type=Intra-frequency measurement
inter-frequency	if measurement type=Inter-frequency measurement
inter-system	if measurement type=Intra-system measurement
traffic volume	if measurement type=traffic volume measurement
Quality	if measurement type=Quality measurement
UE internal	if measurement type=UE internal measurement
CHOICE *reporting criteria*	**Condition under which the given *reporting criteria* is chosen**
******* measurement reporting criteria	Chosen when event triggering is required
Periodical reporting criteria	Chosen when periodical reporting is required

Note 1: It is FFS whether it is necessary to separate the reporting quantity for each type.
Note 2: The network may order the UE to report other measurements when UE internal measurements are reported

10.1.2.3 MEASUREMENT REPORT

<*Functional description of this message to be included here*>
RLC-SAP: AM or UM
Logical channel: DCCH
Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
Measurement Information Elements				
~~Measurement report information~~		~~1 to <maxMeasRepCount>~~		~~Send Measurement Report information for each measurement report in the message (Note 1)~~
—Measurement identity number	M			
—Measured Results	C MR required			
—**CHOICE event result**	C event trigger			~~Note 1,2~~
— Intra-frequency — measurement event results				
— Inter-frequency — measurement event results				
— Inter-system measurement — event results				
— Traffic volume measurement — event results				
— Quality measurement event — results				

Condition	Explanation
event trigger	This element is only included in the message which is sent in event trigger reporting mode.
MR required	This information element is included by the sender only if indicated optionally by Reporting Quantity in Measurement Control

Range Bound	Explanation
MaxMeasRepCount	Maximum number of Measurement reports in a message

CHOICE *event result*	**Condition under which the given *event result* is chosen**
intra-frequency measurement event results	
inter-frequency measurement event results	
inter-system measurement event results	
traffic volume measurement event results	
Quality measurement event results	

~~*Note 1: Whether it is possible to send multiple measurement results that are identified by different measurement identity numbers in the same Measurement Report is FFS. An alternative solution is to allowt 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.*~~

10.1.4.3 RRC CONNECTION RE-ESTABLISHMENT REQUEST

<Functional description of this message to be included here>
RLC-SAP: TM
Logical channel: CCCH
Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
U-RNTI	M			
Measurement information elements				
~~Measurement information~~		~~1 to <MeasRep Count>~~		~~Send Measurement information for each measurement report in the message~~
~~Measurement identity number~~	~~M~~			~~Refers to system information. Note 1~~
Measured results on RACH	M			

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

~~**Range Bound**~~	~~**Explanation**~~
~~*MeasRepCount*~~	~~Number of measurement reports in the message~~

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: TM
Logical channel: CCCH
Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
Initial UE identity	M			
Establishment cause	M			
Initial UE capability	O			Necessity is FFS
Measurement information elements				
~~Measurement information~~		~~1 to <MeasRep Count>~~		~~Send Measurement information for each measurement report in the message~~
~~Measurement identity number~~	~~M~~			~~Refers to system information. Note 1~~
Measured results on RACH	M			

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

~~**Range Bound**~~	~~**Explanation**~~
~~*MeasRepCoun*~~	~~Number of measurement reports in the message~~

10.1.7.4 DIRECT TRANSFER

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: both

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
CN information elements				
CN domain identity	M			
NAS message	M			
Measurement information elements				
Measured results on RACH	O			

10.1.5.19 PUSCH CAPACITY REQUEST (TDD only)

This message is used by the UE for request of PUSCH resources to the UTRAN.
RLC-SAP: t.b.d.
Logical channel: SHCCH
Direction: UE → UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
C-RNTI	M			
Measurement information elements				
Traffic amount information		1 to <RABCount>		Send traffic amount information for each Radio Access Bearer in the message
RB ID	M			
RLC buffer payload	M			
~~Measurement information~~		~~0 to <MeasRepCount>~~		~~Send Measurement information for each measurement report in the message~~
~~Measurement identity number~~	~~M~~			~~Refers to system information~~
Measured results on RACH	~~M~~O			

Range Bound	Explanation
RABCount	Number of traffic amount informations in the message
~~*MeasRepCoun*~~	~~Number of measurement reports in the message~~

10.1.6.4.12 System Information Block type 11

The system information block type 11 contains measurement control information to be used in idle mode. The values may also be used in connected mode if the corresponding IEs are not specified in System information block type 12. The block may also contain scheduling information for other system information blocks.

Area scope: cell

UE mode: idle mode (and connected mode)

Information Element	Presence	Range	IE type and reference	Semantics description
Other information elements				
Value tag	M			
References to other system information blocks		0 .. <maxSysInfoBlockcount>		
Scheduling information	M			
Measurement information elements				
Measurment control information		1 .. <maxMeasurementTypecount>		
Measurement type	M			
CHOICE Measurement	C – Intrafreq			
Intra-frequency				
Intra-frequency cell info	M			
Intra-frequency Measurement quantity	M			
Intra-frequency reporting Quantity for RACH Reporting	M			
Maximum number of Reported cells on RACH	M			
Intra-frequency reporting criteria	O			
Intra-frequency reporting Quantity	O			
Inter-frequency	C – Interfreq			
Inter-frequency cell info	M			
Inter-frequency Measurement quantity	M			
Inter-system	C – Intersys			
Inter-system cell info	M			
Inter-system measurement Quantity	M			
Traffic volume				
Traffic volume measurement objects	O			
Traffic volume measurement quantity	O			
UE Internal				
UE internal measurement quantity	O			

Condition	Explanation
Measurement	The choice shall be consistent (same name) with the value of the 'Measurement type' IE
Intersys	Measurement type = Inter system measurement

Interfreq	Measurement type = Inter frequency measurement
Intrafreq	Measurement type = Intra frequency measurement
Blocktype	The presence of this IE depends on the definition of the system information block type.

Range Bound	**Explanation**
MaxMeasTypeCount	Maximum number of measurement types
MaxSysInfoBlockcount	Maximum number of references to other system information blocks.

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

Information Element	Presence	Range	IE type and reference	Semantics description
Measurement command	M		Enumerated(Setup,Modify ,Release)	

~~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

Information Element	Presence	Range	IE type and reference	Semantics description
Measurement Type	M		Enumerated(Intra-frequency, Inter-frequency, Inter-system, Traffic volume, Quality, UE internal)	

~~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~~
~~• UE internal measurement~~

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 CFN-SFN observed time difference~~Measured time difference to UTRA cell~~

~~For FDD:~~ 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. This measurement is for FDD only.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CFN-SFN observed time difference	M		Enumerated(0..9830399)	Number of chip

~~For TDD: This is the relative time difference in the frame timing between the serving and the target cell measured at the UE.~~

10.2.7.6 Observed time difference~~Measured time difference~~ to GSM cell

(Note: Only the section is made.)

10.2.7.7 Measurement reporting mode

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Measurement Report Transfer Mode	M		enumerated (Acknowledged mode RLC, ~~/~~ Unacknowledged mode RLC)	
Periodical Reporting / Event Trigger Reporting Mode	M		Enumerated (Periodical reporting, ~~/~~ Event trigger)	

10.2.7.8 Intra-frequency cell info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~Primary CCPCH info~~	~~M~~			
~~Primary CCPCH DL TX power~~	~~O~~			
~~UL load~~Cell individual offset	O		Enumerated(-10, -9.5..10)	~~FFS~~Granularity 0.5 dB
~~SFN Measurement Indicator~~	~~M~~			
CHOICE *mode*				
FDD				
Primary CPICH info	M			
Primary CPICH Tx power	O			
SFN Measurement Indicator	M		Boolean	
STTD Indicator	M		Boolean	
TDD				
Primary CCPCH info	M			
Primary CCPCH Tx power	O			
DL CCTrCH info	O			List of TFCS ID's to measure
DL Timeslot info	O			List of timeslots to measure

10.2.7.9 Inter-frequency cell info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Frequency info	M			
Cell individual offset	O		Enumerated(-10, -9.5..10)	Granularity 0.5 dB
Reference time difference to cell	O		Enumerated((-153088, 152576 ..153088)	In chip. This is –299 to 299 times 512 chip in steps of 512 chip
CHOICE *mode*				
FDD				
Primary CPICH info	O			Not required if measuring RSSI only
Primary CPICH Tx power	O			
TDD				
Primary CCPCH info	M			
Primary CCPCH ~~DL~~ TX power	O			~~FFS~~
~~UL load~~	~~O~~			~~FFS~~
~~Reference time difference to cell~~	~~O~~			~~FFS~~

10.2.7.10 Inter-system cell info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE *system*~~System type~~	~~M~~		~~Enumerated (GSM,..)~~	
GSM				
~~System specific measurement info~~frequency	M		~~Enumerated (frequency, timeslot, colour code, output power.)~~	
BSIC	O			
Output power	O			

10.2.7.11 Traffic volume measurement object

Contains the measurement object information for a traffic volume measurement.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Target Transport Channel~~H~~ ID	M		Enumerated(1..64)	

10.2.7.12 Quality measurement object (FFS)

(Note: Only the section is made.)

10.2.7.13 Intra-frequency measurement quantity

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~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~~			
CHOICE *mode*				
FDD				
Measurement quantity	M		Enumerated(CPICH Ec/N0, CPICH RSCP, CPICH SIR, Pathloss)	Pathloss=Primary CPICH Tx power-CPICH RSCP Note 1
TDD				
Measurement quantity	M		Enumerated(Primary CCPCH RSCP, Pathloss, Timeslot ISCP)	Pathloss=Primary CCPCH Tx power-Primary CCPCH RSCP
~~DL CCTrCH SIR~~	~~O~~			
~~DL Timeslot ISCP~~	~~O~~			

(Note 1: ~~Above measurements except for Ec/Io are~~If CPICH SIR can be used has not been concluded in WG4~~1~~)

10.2.7.14 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.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE *mode*				
FDD				
Measurement quantity	M		Enumerated(CPICH Ec/N0, CPICH RSCP, Pathloss, UTRA carrier RSSI)	Pathloss=Primary CPICH Tx power-CPICH RSCP
TDD				
Measurement quantity	M		Enumerated(Primary CCPCH RSCP, Pathloss, UTRA carrier RSSI)	Pathloss=Primary CCPCH Tx power-Primary CCPCH RSCP
~~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~~			

10.2.7.15 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.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE *system*				
GSM				
Measurement quantity	M		Enumerated(GSM Carrier RSSI, Pathloss)	
BSIC verification required	M		Boolean	Note 1
~~E_c/I_0~~	~~O FFS~~			~~One of these is mandatory~~
~~Signal strength~~	~~O~~			
~~Path loss~~	~~O FFS~~			
~~Colour code~~	~~C - GSM~~			

Note 1 The possibility to use this IE is dependant on comments from SMG2.
Also, this IE must be set to "true" if IE "Observed time difference to GSM cell" in IE "Inter-system measurement reporting quantity "is set to "true".

CHOICE *system*~~Condition~~	**Condition under which the given *system* is chosen~~Explanation~~**
GSM	~~This information element is only sent~~Used when the system being measured is a GSM system

10.2.7.16 Traffic volume measurement quantity

Contains the measurement quantity information for a traffic volume measurement.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Measurement quantity	M		Enumerated(RLC buffer payload, Average RLC buffer payload, Variance of RLC buffer payload)	
~~RLC buffer payload~~	~~M~~			
~~Average RLC buffer payload~~	~~O~~			
~~Variance of RLC buffer payload~~	~~O~~			

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

10.2.7.17 UE internal measurement quantity

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Measurement quantity	M		Enumerated(UE Transmitted Power, UTRA Carrier RSSI)	
~~UE Tx power~~	~~O~~			~~One of these is mandatory~~
~~UE RSSI~~	~~O~~			

10.2.7.18 Quality measurement quantity (FFS)

(Note: Only the section is made.)

10.2.7.19 Intra-frequency reporting quantity

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~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~~			
For active set cells				
SFN-SFN observed time difference	M		Enumerated(No report, type 1, type 2)	
~~DL Transport CH BLER~~	~~O~~			
~~DL Transport CH BER~~	~~O~~			~~FFS~~
~~UE Transmission Power~~	~~O~~			
~~UE Position~~	~~O~~			
Cell Identity~~D~~	M~~O~~		Boolean	~~FFS~~
CHOICE *mode*				
FDD				
CPICH Ec/N0	M		Boolean	
CPICH RSCP	M		Boolean	
CPICH SIR	M		Boolean	Note 1
Pathloss	M		Boolean	
CFN-SFN observed time difference	M		Boolean	
TDD				
DL CCTrCH SIR	M		Boolean	
~~DL~~ Timeslot ISCP	M		Boolean	
Primary CCPCH RSCP	M		Boolean	
Pathloss	M		Boolean	
For monitored set cells				
SFN-SFN observed time difference	M		Enumerated (No report, type 1, type 2)	
Cell Identity	M		Boolean	
CHOICE *mode*				
FDD				
CPICH Ec/N0	M		Boolean	
CPICH RSCP	M		Boolean	
CPICH SIR	M		Boolean	Note 1
Pathloss	M		Boolean	
CFN-SFN observed time difference	M		Boolean	
TDD				
DL CCTrCH SIR	M		Boolean	
Timeslot ISCP	M		Boolean	
Primary CCPCH RSCP	M		Boolean	
Pathloss	M		Boolean	

(Note 1: If CPICH SIR can be used has not been concluded in WG4)

~~(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.)~~

10.2.7.20 Intra-frequency reporting quantity for RACH reporting

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~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~~
SFN-SFN observed time difference	M		Enumerated(No report, type 1, type 2)	
CHOICE *mode*				
FDD				
CHOICE quantity				
CPICH Ec/N0			NULL	
CPICH RSCP			NULL	
CPICH SIR			NULL	Note 1
Pathloss			NULL	
TDD				
~~DL~~ Timeslot ISCP				
Primary CCPCH RSCP				

(Note 1: If CPICH SIR can be used has not been concluded in WG4)

10.2.7.21 Inter-frequency reporting quantity ~~(FFS)~~

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~Measured time difference to cell~~	~~O~~			
SFN-SFN observed time difference	M		Enumerated(No report, type 1, type 2)	Note 1
Cell Identity	M		Boolean	
UTRA Carrier RSSI	M		Boolean	
Frequency quality estimate	M		Boolean	
CHOICE *mode*				
FDD				
CPICH Ec/N0	M		Boolean	
CPICH RSCP	M		Boolean	
Pathloss	M		Boolean	
CFN-SFN observed time difference	M		Boolean	Note 1
TDD				
Primary CCPCH ~~R_x~~ RSCP	~~O~~M		Boolean	
~~E_c/N_0 of Primary CCPCH~~	~~O~~			

Note 1 Feasability of performing these measurements with compressed mode is unclear.

10.2.7.22 Inter-system reporting quantity ~~(FFS)~~

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE *system*				
GSM				
Pathloss	M		Boolean	
Observed time difference to GSM cell	M		Boolean	
~~RSS I on BCCH carrier~~GSM Carrier RSSI	M		Boolean	
BSIC	M		Boolean	

CHOICE *system*	**Condition under which the given *system* is chosen**
GSM	Used when the system being measured is a GSM system

10.2.7.23 Traffic volume reporting quantity

Contains the reporting quantity information for a traffic volume measurement.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
RLC buffer payload for each RB	~~O~~M		Boolean	
Average RLC buffer payload for each RAB	~~O~~M		Boolean	
Variance of RLC buffer payload for each RAB	~~O~~M		Boolean	
~~Event type on each Transport channel~~	~~O~~			~~Indicates overflow or underflow~~
~~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.~~

10.2.7.24 Quality reporting quantity ~~(FFS)~~

Information Element/Group name	**Presence**	**Range**	**IE type and reference**	**Semantics description**
DL Transport Channel BLER for each transport channel	M		Boolean	
DL Physical channel BER	M		Boolean	
SIR	M		Boolean	

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

10.2.7.X UE Internal reporting quantity

Information Element/Group name	**Presence**	**Range**	**IE type and reference**	**Semantics description**
UE Transmitted Power	M		Boolean	
UE Position	M		Boolean	

10.2.7.25 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 CPICH enters the Reporting Range ~~[Note1]~~(FDD only)
Event 1b: A Primary CPICH leaves the Reporting Range ~~[Note2]~~ (FDD only)
Event 1c: A Non-active Primary CPICH becomes better than an active Primary CPICH ~~[Note3]~~(FDD only)
Event 1d: Change of best cell [Note1~~4, 5~~] (FDD ony)
Event 1e: ~~Other types of ranking of Primary CPICHs (FFS)~~ A Primary CPICH becomes better than an absolute threshold (FDD only)
Event 1f: A Primary C~~C~~PICH becomes worse than an absolute threshold (FDD only)
Event 1g: Change of best cell in TDD
Event 1h: DL CCTrCH below a certain threshold (TDD only)
Event 1i: ~~DL~~ Timeslot ISCP below a certain threshold (TDD only)
Event 1j: ~~DL~~ Timeslot ISCP above a certain threshold (TDD only)

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~Max number of reporting cells~~	~~O~~			~~Common parameter for all events~~
~~RACH measurement reporting parameters~~				~~Group name~~
~~Maximum number of reported cells on RACH~~	~~O~~			
Parameters required for each event		0 to <maxEvent count>		
Event ID	M		Enumerated (1a,1b,1c,1d, 1e,1f,1g,1h,1 I,1j)	~~1a, 1b, 1c, 1d, 1e, 1f, 1g, 1h, 1I, 1j~~
Triggering condition	C - clause 0		Enumerated(Active set cells, Monitored set cells, Active set cells and monitored set cells)	Indicates ~~whether~~ which cells that can trigger the event ~~shall be triggered by:~~ ~~Active set cells only~~ ~~Monitored set cells only~~ ~~Both active set cells and monitored set cells~~
Reporting Range	C - clause 1		Enumerated(0, 0.5..14.5)	In event 1a,1b. Granularity 0.5 dB
Cells forbidden to affect Reporting range	C – clause 1	0 to <maxCells Forbidden >		In event 1a,1b
CHOICE *mode*				
FDD				
Primary CPICH info	M			
TDD				
Primary CCPCH info	M			
~~S~~ W	C – clause 1		Enumerated(0, 0.1..2.0)	In event 1a,1b Granularity 0.1
Hysteresis	C & O - clause 2		Enumerated(0, 0.5..7.5)	In event 1a, 1b, 1c,1d, 1g, 1h, 1i or 1j. Granularity 0.5 dB
Reporting deactivation threshold	C - clause 3		Enumerated(0..7)	In event 1a 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 - clause 4		Enumerated(0..7)	In event 1c 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		Enumerated(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms.
Amount of reporting	M		Enumerated(1, 2, 4, 8, 16, 32, 64,	Measurement ~~for the indicated Transport CH ID~~ is “released”

			Infinity)	after the indicated amount of reporting from the UE itself. ~~FFS~~
Reporting interval	M		Enumerated(0, 0.25, 0.5, 1, 2, 4, 8, 16)	Indicates the interval of periodical reporting when such reporting is triggered by an event. A zero value indicates that event triggered periodical reporting shall not be applied. Interval in seconds.

Condition	Explanation
Clause 0	This parameter is only sent in event 1a,1b, 1e, 1f
Clause 1	This parameter is only sent in event 1a,1b
Clause 2	This parameter is only sent in event 1a,1b, 1c,1d, 1g, 1h, 1i, 1j
Clause 3	This parameter is only sent in event 1a
Clause 4	This parameter is only sent in event 1c

Range Bound	**Explanation**
MaxCellsForbidden	Maximum number of cells that can be forbidden to affect reporting range

~~[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~~ Note1: 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.]~~

10.2.7.26 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.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description

10.2.7.27 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.

10.2.7.28 Traffic volume measurement reporting criteria

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Parameters sent for each transport channel		1 to <maxTrCH count>		
Transport ~~CH~~ channel Id	M		Enumerated(1..64)	
Upper Threshold	M		Enumerated(8,16,32,64,128,256,512,1024,1536,2048,3072,4096,6144,8192)	Threshold in bytes
Lower Threshold	O		Enumerated(8,16,32,64,128,256,512,1024,1536,2048,3072,4096,6144,8192)	Threshold in bytes
Time to trigger	M		Enumerated(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms.
Pending time after trigger	M		Enumerated(0.25, 0.5, 1, 2, 4, 8, 16)	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. Time in seconds.
Tx interruption after trigger	M		Enumerated(0.25, 0.5, 1, 2, 4, 8, 16)	Indicates whether or not the UE shall block DTCH transmissions on the RACH after a measurement report is triggered. Time in seconds.
Amount of reporting	M		Enumerated(1, 2, 4, 8, 16, 32, 64, Infinity)	Measurement ~~for the indicated Transport CH ID~~ is “released” after the indicated amount of reporting from the UE itself. ~~FFS~~
Reporting interval	M		Enumerated(0, 0.25, 0.5, 1, 2, 4, 8, 16)	Indicates the interval of periodical report during the event is in the detected state Interval in seconds. ~~FFS~~

Range Bound	Explanation
MaxTrCHcount	Maximum number of transport channels = 64

10.2.7.29 Quality measurement reporting criteria (FFS)

(Note: Only the section is made.)

10.2.7.30 UE internal measurement reporting criteria

The triggering of the event-triggered reporting for a UE internal measurement. All events concerning UE internal measurements are labelled 6x where x is a, b, c…. In TDD, the events 6a - 6d are measured and reported on timeslot basis.

Event 6a: The UE ~~Tx~~ Transmitted P~~p~~ower becomes larger than an absolute threshold
Event 6b: The UE Transmitted P~~Tx p~~ower becomes less than an absolute threshold
Event 6c: The UE Transmitted P~~Tx p~~ower reaches its minimum value
Event 6d: The UE Transmitted P~~Tx p~~ower reaches its maximum value
Event 6e: The ~~UE~~ UTRAN Carrier RSSI reaches the UE's dynamic receiver range

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Parameters sent for each UE internal measurement event		1 to <maxEvent count>		
Event ID	M		Enumerated(6a,6b,6c,6d, 6e)	~~6a, 6b, 6c, 6d or 6e~~
Time-to-trigger	M		Enumerated(0, 10, 20, 40, 60, 80, 100, 120, 160, 200, 240, 320, 640, 1280, 2560, 5000)	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms.
UE ~~Tx~~ Transmitted power threshold	C - clause 1		Enumerated(-50..33)	In event 6a, 6b Power in dBm

~~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~~

Condition	Explanation
Clause 1	This parameter is only sent in event 6a,6b

10.2.7.31 Periodical reporting criteria

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~Max number of reporting cells~~	~~O~~			~~Indicates the maximum number of cells to report.~~
Amount of reporting	O		Enumerated(1, 2, 4, 8, 16, 32, 64, Infinity)	Measurement is “released” after the indicated amount of reporting from the UE itself
Reporting interval	O		Enumerated(0, 0.25, 0.5, 1, 2, 3, 4, 6, 8, 12, 16, 20, 24, 28, 32, 64)	Indicates the interval of periodical report. Interval in seconds.

10.2.7.32 Intra-frequency measurement event results

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Event ID	M			
~~Primary CCPCH info~~	~~O~~			
CHOICE *mode*				
FDD				
Primary CPICH info	O			
TDD				
Primary CCPCH info	O			
~~DL CCTrCH SIR~~	~~O~~			
~~DL Timeslot ISCP~~	~~O~~			

10.2.7.33 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.

10.2.7.34 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.

10.2.7.35 Traffic volume measurement event results

Contains the event result for a traffic volume measurement.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Transport ~~CH~~ channel ID	M		Enumerated(1..64)	
Event type	O		Enumerated(Overflow, Underflow)	

10.2.7.36 Quality measurement event results (FFS)

(Note: Only the section is made.)

10.2.7.37 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.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Inta-frequency measurement results		0 to <maxIntraCells>		
Cell Identity	O			
SFN-SFN observed time difference	O			
CHOICE *mode*				
FDD				
Primary CPICH info	M			
CPICH Ec/N0	O		Enumerated(-20..0)	In dB
CPICH RSCP	O		Enumerated(-115..-40)	In dBm
CPICH SIR	O		Enumerated(-10..20)	In dB Note 1
Pathloss	O		Enumerated(46..158)	In dB
CFN-SFN observed time difference	O			
TDD				
Primary CCPCH info	M			
Primary CCPCH RSCP	O			
DL CCTrCH SIR		0 to <maxCCTrCHcount>		SIR measurements for each DL CCTrCH
Timeslot		0 to <maxTSperCCTrCHcount		All timeslots on which the CCTrCH is mapped on
ISCP	O			
RSCP	O			
DL Timeslot ISCP		0 to <maxTStoMEASURE count>		ISCP measurements for each timeslot indicated by the UTRAN
ISCP	O			
Inter-frequency measurement results		0 to <maxNumFreq>		
UTRA carrier	M			
UTRA carrier RSSI	O		Enumerated(-95..-30)	In dBm
Inter-frequency cell measurement results		0 to <maxInterCells>		
Cell Identity	O			
SFN-SFN observed time difference	O			
CHOICE *mode*				
FDD				
Primary CPICH info	M			
CPICH Ec/N0	O		Enumerated(-20..0)	In dB
CPICH RSCP	O		Enumerated(-115..-40)	In dBm
Pathloss	O		Enumerated(46..158)	In dB
CFN-SFN observed time difference	O			
TDD				
Primary CCPCH info	M			
Primary CCPCH RSCP	O			
Inter-system measurement		0 to		

results		<maxInterSys>		
CHOICE *system*				
GSM				
Frequency	M			
GSM carrier RSSI	O		Enumerated(0..63)	RXLEV GSM TS 05.08
Pathloss	O		Enumerated(46..158)	In dB
BSIC	O		Bitstring(6)	GSM TS 03.03
Observed time difference to GSM cell	O		Enumerated(0..4095*3060/(4096*13)	In steps of 3060/(4096*13) ms
Traffic volume measurement results		0 to <MaxTraf>		
RB Identity	M			
~~RB ID~~ ~~+~~ RLC buffers payload	O		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K)	In bytes And Kbytes = N*1024 bytes
Average RLC buffer payload	O		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1024K)	In bytes And Kbytes = N*1024 bytes
Variance of RLC buffer payload	O		Enumerated(0, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2K, 4K, 8K, 16K)	In bytes And Kbytes = N*1024 bytes
~~PCCPCH Info + Primary CCPCH RX E_c/I_0~~	~~O~~			
~~PCCPCH Info + Primary CCPCH RX SIR (RSCP/ISCP)~~	~~O~~			~~FFS~~
~~PCCPCH Info + Primary CCPCH RX power (RSCP)~~	~~O~~			~~FFS~~
~~PCCPCH Info + Path loss~~	~~O~~			~~FFS~~
~~PCCPCH Info + Path loss plus UL load~~	~~O~~			~~FFS~~
~~PCCPCH Info + Measured time difference to cell~~	~~O~~			
Quality measurement results				
BLER measurement results		0 to <MaxBLER>		
Transport channel identity	M			
DL Transport ~~CH~~ channel BLER	O		Enumerated(0, 0.02 ..5.10)	dB%=-Log10(Transport channel BLER) Granularity 0.02
DL ~~Transport CH~~ Physical channel BER	O		Enumerated(0, 0.02 ..5.10)	~~FFS~~dB%=-Log10(Physical channel BER) Granularity 0,02
SIR	O		Enumerated(	In dB

			-10..20)	
UE Internal measurement results				
UE Position	O			
CHOICE *mode*				
FDD				
UE Transmitted~~ssion~~ Power	O		Enumerated(-50..33)	UE transmitted~~ssion~~ power ~~(FDD)~~ In dBm
TDD				
~~T_x~~ UE Transmitted Power	O	0 to <maxUsed UplTScount >		UE transmitted~~ssion~~ power for each used timeslot (TDD)
~~UE Position~~	~~O~~			
~~Cell ID~~	~~O~~			~~FFS~~
~~GSM Cell ID + measured time difference to cell~~	~~O~~			
~~GSM Cell ID + RSSI on BCCH carrier~~				
~~CHOICE *mode*~~				
~~TDD~~				
~~DL CCTrCH SIR~~		~~0 to <maxCCTrCHcount>~~		~~SIR measurements for each DL CCTrCH~~
~~Timeslot~~		~~0 to <maxTSperCCTrCHcount~~		~~All timeslots on which the CCTrCH is mapped on~~
~~R_x ISCP~~	~~O~~			
~~R_x RSCP~~	~~O~~			
~~DL Timeslot ISCP~~		~~0 to <maxTStoMEASURE count>~~		~~ISCP measurements for each timeslot indicated by the UTRAN~~
~~R_x ISCP~~	~~O~~			

Range Bound	Explanation
MaxCCTrCHcount	Maximum number of DL CCTrCH allocated to an UE
MaxTSperCCTrCHcount	Maximum number of TS on which a single DL CCTrCH is mapped on
MaxTStoMEASUREcount	Maximum number of TS on which the UE has to measure
MaxUsedUplTScount	Maximum number of TS used for UL transmissions
MaxIntraCells	Maximum number of Intra-frequency cells that can be included in a measurement report
MaxNumFreq	Maximum number of frequencies with intra-frequency cells that can be included in a measurement report
MaxInterCells	Maximum number of Inter-frequency cells for one frequency that can be included in a measurement report
MaxInterSys	Maximum number of Inter-system cells that can be included in a measurement report
MaxTraf	Maximum number of radio bearers with traffic volume mesurements that can be included in a measurement report
MaxBLER	Maximum number of transport channels with BLER measurements that can be included in a measurement report

(Note 1: If CPICH SIR can be used has not been concluded in WG4)

10.2.7.38 SFN Measurement Indicator

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

10.2.7.39 Maximum number of reported cells on RACH

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Number of reported cells	M		Enumerated (no report, current cell, current cell + best neighbour, current cell+2 best neighbours, …, current cell+6 best neighbours)	

10.2.7.40 Inter-frequency SET UPDATE (FDD only)

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

Information Element/group name	Presence	Range	IE type and reference	Semantics description
Radio link addition information		0 to <maxAddRLcount>		Radio link addition information required for each RL to add
Primary CPICH info	M			Note 1
Radio link removal information		0 to <maxDelRLcount>		Radio link removal information required for each RL to remove
Primary CPICH info	M			Note 1

Range bound	Explanation
MaxAddRLcount	Maximum number of radio links which can be added
MaxDelRLcount	Maximum number of radio links which can be removed/deleted

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

10.2.7.X Primary CPICH TX Power (FDD only)

Information Element/group name	Presence	Range	IE type and reference	Semantics description
Primary CPICH Tx Power	M		Enumerated(6..43)	In dBm and 1 dB granularity

10.2.7.X Primary CCPCH TX Power (TDD only)

Information Element/group name	Presence	Range	IE type and reference	Semantics description
Primary CCPCH Tx Power	M		Enumerated(6..43)	In dBm and 1 dB granularity

10.2.7.X Measurement results on RACH

Information Element/group name	Presence	Range	IE type and reference	Semantics description
Measurement result for current cell				
CHOICE *mode*				
FDD				
CHOICE measurement quantity				
CPICH Ec/N0			Enumerated(-20..0)	In dB
CPICH RSCP			Enumerated(-115..-40)	In dBm
CPICH SIR			Enumerated(-10..20)	In dB Note 1
Pathloss			Enumerated(46..158)	In dB
TDD				
Timeslot ISCP				
Primary CCPCH RSCP				
Measurement results for neighbouring cells		0 to 6		
SFN-SFN observed time difference	O			
CHOICE *mode*				
FDD				
Primary CPICH info	M			
CHOICE measurement quantity				
CPICH Ec/N0			Enumerated(-20..0)	In dB
CPICH RSCP			Enumerated(-115..-40)	In dBm
CPICH SIR			Enumerated(-10..20)	In dB Note 1
Pathloss			Enumerated(46..158)	In dB
TDD				
Primary CCPCH info	M			
Primary CCPCH RSCP				

(Note 1: If CPICH SIR can be used has not been concluded in WG4)

10.2.7.X SFN-SFN observed time difference

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE *type*				
Type 1			Enumerated(0..9830399)	Number of chip
Type 2			Enumerated(-1279, -1278.5..1280)	Number of chip Granularity of 0.5 chip

10.2.7.x Measurement validity

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Resume/release	M		Enumerated ('resume', 'release')	Indicates whether a given measurement identifier should be released after transitions to CELL_DCH and/or transitions from CELL_DCH state.
UE state	C – if Resume		Enumerated ('Cell_DCH', 'all states except CELL_DCH', 'all states')	Indicates the states, in which measurement reporting shall be conducted. The values 'all states except CELL_DCH' and 'all states' are used for measurement type 'traffic volume reporting'.

Condition	Explanation
Resume	If "Resume/Release" = Resume

14 Specific functions

14.1 Intra-frequency measurements

14.1.1 Intra-frequency measurement quantities

1. Downlink E_c/I_0 (chip energy per total received channel power density)
2. *Downlink path loss.* ~~*(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).*(Note 1: If CPICH SIR can be used has not been concluded in WG4~~FFS~~*)*
5. *Averaged signal-to-interference ratio (SIR) for all DL codes belonging to one TS and to one CCTrCH*
6. *ISCP measured on Timeslot basis*

14.1.2 Intra-frequency reporting events for FDD

Within the measurement reporting criteria field in the Measurement Control message the UTRAN notifies the UE which events should trigger a measurement report. 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 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 14.1.1. The

measurement objects are the monitored primary common pilot channels (CPICH). The reporting events are marked with vertical arrows in the figures below.

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

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

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

$$10 \cdot LogM_{New} \geq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R + H_{1a}),$$

The variables in the formula are defined as follows:

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

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

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

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

~~**S**~~**W** is a parameter sent from UTRAN to UE.

R is the reporting range

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

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

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

Event 1A may be enhanced with an addition timer, which is configured with the **time-to-trigger** parameter (see section 14.1.4.2). If a time-to-trigger value is used, a cell must continuously stay within the reporting range for the given time period, before the UE shall send a measurement report.

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

14.1.2.2 Reporting event 1B: A primary CPICH 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 CPICH leaves the reporting range as defined by the following formula:

$$10 \cdot LogM_{Old} \leq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R + H_{1b}),$$

The variables in the formula are defined as follows:

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

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

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

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

~~**S**~~**W** is a parameter sent from UTRAN to UE.

R is the reporting range

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

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

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

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

14.7 Provision and reception of RRC Initialisation Information between RNCs

When relocation of SRNS is decided to be executed, the RRC shall build the state information, which contains the RRC, RLC and MAC related RRC message information elements, which currently specify the state of the RRC. This RRC INITIALISATION INFORMATION shall be sent by the source RNC to the target RNC to enable transparent relocation of the RRC and lower layer protocols. Correspondingly, the RRC in the target RNC shall receive the RRC INITIALISATION INFORMATION and update its state parameters accordingly to facilitate a transparent relocation of SRNS for the UE.

14.7.1 RRC Initialisation Information

Information Element	Presence	Range	IE type and reference	Semantics description
UE Information elements				
U-RNTI				
C-RNTI				
Power Control Capability				
Code Resource Capability				
UE Mode Capability				
Transport CH support capability				
Ciphering Capability				
Macro Diversity Capability				
FAUSCH usage support				
Inter System message (inter system classmark)				
UTRAN Mobility Information elements				
URA Identifier				
CN Information Elements				
CN Domain Identity				
NAS System Info				
Measurement Related Information elements				
For each ongoing measurement reporting				
Measurement Identity Number				
Measurement Command				
Measurement Type				
Measurement Reporting Mode				
Additional Measurement Identity number				
CHOICE Measurement				
Intra-frequency				
Intra-frequency cell info				
Intra-frequency measurement quantity				
Intra-frequency measurement reporting quantity				
Maximum number of reporting				

cells				
Measurement validity				
CHOICE report criteria				
Intra-frequency measurement reporting criteria				
Periodical reporting				
No reporting				
Inter-frequency				
Inter-frequency cell info				
Inter-frequency measurement quantity				
Inter-frequency measurement reporting quantity				
Maximum number of reporting cells				
Measurement validity				
CHOICE report criteria				
Inter-frequency measurement reporting criteria				
Periodical reporting				
No reporting				
Inter-system				
Inter-system cell info				
Inter-system measurement quantity				
Inter-system measurement reporting quantity				
Maximum number of reporting cells				
Measurement validity				
CHOICE report criteria				
Inter-system measurement reporting criteria				
Periodical reporting				
No reporting				
Traffic Volume				
Traffic volume measurement Object				
Traffic volume measurement quantity				
Traffic volume measurement reporting quantity				
CHOICE report criteria				
Traffic volume measurement reporting criteria				
Periodical reporting				
No reporting				
Quality				
Quality measurement Object				
Quality measurement quantity				
Quality measurement reporting quantity				
CHOICE report criteria				
Quality measurement reporting criteria				
Periodical reporting				
No reporting				

UE internal				
UE internal measurement quantity				
UE internal measurement reporting quantity				
CHOICE report criteria				
UE internal measurement reporting criteria				
Periodical reporting				
No reporting				
Radio Bearer Information Elements				
For each Radio Bearer				
RB Identity				
RLC Info				
RB mapping info				
Transport Channel Information Elements				
TFCS (UL DCHs)				
TFCS (DL DCHs)				
TFC subset (UL DCHs)				
For each uplink transport channel				
Transport channel identity				
TFS				
DRAC Information				
Dynamic Control				
Transmission Time validity				
Time duartion before retry				
Silent Period duration before release				
For each downlink transport channel				
Transport channel identity				
TFS				
Physical Channel Information Elements				
Frequency info				
Uplink DPCH power control info				
SSDT Indicator				FFS
CPCH SET info				
Gated Transmission Control info				FFS
Default DPCH Offset value				
Uplink radio resource information				
Choice channel requirement				
Uplink DPCH info				
PRACH info (for RACH)				
PRACH info (for FAUSCH)				
Uplink Timeslot info				
Downlink Radio Resource Information				
Downlink DPCH power control info				
Downlink DPCH compressed mode info				
Downlink Information				
Primary CCPCH Info				
Downlink DPCH info				
Secondary CCPCH info				

Downlink Timeslot info				

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99k37)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	016r2	Current Version:	intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2	**Date:**	1999-12-02		
Subject:	Message contents for inter system handover to UTRAN				
Work item:					

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:
This CR includes the changes to the RRC procedure specification for inter-System handover to UTRAN as agreed at TSG RAN WG2#8.

From TSG-RAN WG#9 some additional details are added concerning the contents of the HANDOVER TO UTRAN COMMAND message.

Clauses affected: 8.3.6.1 - 8.3.6.5, 10.1.1.x (new), 10.2.4.x (new)

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:


help.doc

<---------- double-click here for help and instructions on how to create a CR.

8.3.6 Inter-system handover to UTRAN

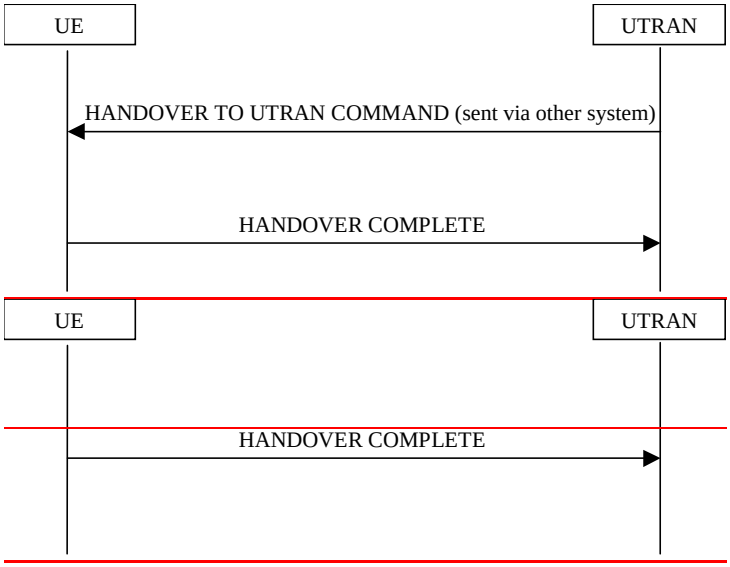


Figure 1. Inter system handover to UTRAN, successful case

8.3.6.1 General

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

8.3.6.2 Initiation

The procedure is initiated when ~~the UE is connected to a~~n radio access system other than UTRAN, e.g. GSM, and, using system specific procedures, ~~is~~ order~~sed~~ the UE ~~by that radio access system~~ to make a handover to UTRAN.

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

~~*[Editor´s note: Message XXXX needs to be defined.]*~~

~~8.3.6.2.1 Message XXXX contents to set~~

UTRAN should ~~provide~~ include the following information ~~to the other system to be included~~ in the HANDOVER TO UTRAN COMMAND ~~XXXX~~ message.

- the IE “U-RNTI” to be assigned
- The IE “Predefined radio configuration identity”, to indicate which pre-defined configuration of RB, traffic channel and physical channel parameters shall be used

~~• UE information elements~~

~~• RB information elements~~

~~• TrCH information elements~~

- PhyCH information elements

~~Whether the other radio access system also provide other information is FFS.~~

8.3.6.3 Reception of HANDOVER TO UTRAN COMMAND ~~XXXX~~ message by the UE

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following~~.~~:

The UE shall

- Store the value of the IE “U-RNTI” and

- Initiate the signalling link, the RB(s) and traffic channel(s) in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity"
- Initiate the physical channels in accordance with the predefined parameters identified by the IE "Predefined radio configuration identity" and the received physical channel information elements
- Perform an open loop estimation to determine the UL transmission power, taking into account the received IE "Maximum allowed UL TX power" and move to CELL_DCH state
- Apply the same ciphering (ciphered/ unciphered, algorithm) as prior to inter system handover, unless a change of algorithm is requested by means of the "Ciphering algorithm"

~~The UE shall~~

~~• Store the value of the IE "New U-RNTI" and~~

~~• Initiate the signalling link parameters according to the IEs "Signalling link type" and "RB mapping info".~~

~~If additional RB IEs are included, the UE shall~~

~~• use the multiplexing option applicable for the transport channels used according to the IE "RB mapping info"~~

~~• Configure MAC multiplexing if that is needed in order to use said transport channel(s).~~

~~• Use MAC logical channel priority when selecting TFC in MAC.~~

~~If the IE "New C-RNTI" is included, the UE shall~~

~~• Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.~~

~~If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall~~

~~• Let the physical channel of type PRACH that is given in system information be the default in uplink and enter the CELL_FACH state.~~

~~If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall~~

~~• Start to receive the physical channel of type Secondary CCPCH that is given in system information.~~

~~The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall~~

~~• Use the TFS given in system information~~

~~If none of the TFS stored is compatible with the physical channel, the UE shall~~

~~• Delete stored TFS and use the TFS given in system information~~

If the UE succeeds to establish the connection to UTRAN, it shall transmit a HANDOVER COMPLETE message on the uplink DCCH. When the transmission of the HANDOVER COMPLETE message has been confirmed by RLC, the procedure ends.

8.3.6.4 UE fails to perform handover

If the UE does not succeed to establish the connection to UTRAN, it shall terminate the procedure including release of the associated resources, resume the connection used before the handover and indicate the failure to the other radio access system.

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

8.3.6.5 Reception of message HANDOVER COMPLETE by the UTRAN

Upon receiving a HANDOVER COMPLETE message, UTRAN should consider the inter- system handover procedure as completed succesfully and indicate this to the CN.

10.1.1.x HANDOVER TO UTRAN COMMAND

<Functional description of this message to be included here>
RLC-SAP: N/A
Logical channel: N/A
Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
UE information elements				
U-RNTI	M			
Activation time	O			
Ciphering algorithm	O		As defined in 10. 2.3.34	Included in case of change of algorithm during handover
RB information elements				
Predefined radio configuration identity	M			
PhyCH information elements				
Frequency info_2	M			
UTRA RF Channel number	M		As defined in 10.2.6.1	
Radio access mode	M		As defined in 10.2.6.1	
Maximum allowed UL TX power	M			
Uplink DPCH power control info_2	M			
DPDCH power offset	M		As defined in 10.2.6.9	
TPC step size	M		As defined in 10.2.6.9	
Uplink radio resource information				
Uplink DPDCH info_2	M			
Scrambling code type	M		As defined in 10.2.6.8	
Scrambling code number	M		As defined in 10.2.6.8	
DPDCH channelisation code	M		As defined in 10.2.6.8	
Downlink radio resource information				
Downlink DPCH power control info	M			
Downlink information		1 to <Max RIcount>		Send downlink information for each radio link to be set-up
Primary CCPCH info_2	M			
Primary scrambling code	M		As defined in 10.2.6.2	
Downlink DPDCH info_2	M			
Secondary scrambling code	O		As defined in 10.2.6.10	
Spreading factor	M		As defined in 10.2.6.10	
Code number	M		As defined in 10.2.6.10	

10.2.4.x Predefined radio configuration identity

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Predefined radio configuration identity	M		Ennumerated (0..15)	

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

Document* *(R2-99k99)
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	**CR**	**034r1**	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-RAN#6 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: TSG-RAN WG2 **Date:** 29th Nov 1999

Subject: Open loop power control for PRACH

Work item:

Category: *(only one category shall be marked with an X)*			**Release:**	
F	Correction		Phase 2	
A	Corresponds to a correction in an earlier release		Release 96	
B	Addition of feature	X	Release 97	
C	Functional modification of feature		Release 98	
D	Editorial modification		Release 99	X
			Release 00	

Reason for change: The current assumption of the divisions of power control in-between the working groups is that WG2 should include the calculation of initial power for the first preamble of a preamble transmission cycle sent on PRACH. However, that has until now been included in the WG1 specifications. It is therefore included here in the RRC specification.

LS R2-99d94 from WG1 treated at the RAN WG2 #8 initiated this CR.

Clauses affected: New clause added 8.5.x

Other specs affected:			
Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.5.x Open loop power control

For FDD and prior to PRACH transmission the UE shall calculate the power for the first preamble as:

Preamble_Initial_Power = Primary CPICH DL TX power – CPICH_RSCP + UL interference + Constant Value

Where

Primary CPICH DL TX power shall have the value of IE "Primary CPICH DL TX power",

UL interference shall have the value of IE "UL interference" and

Constant Value shall have the value of IE "Constant Value"

The IEs "Primary CPICH DL TX power", "UL interference" and "Constant value" shall be read in IE "PRACH power control info" on system information in system information block 7 or system information block 8.

The value for the CPICH_RSCP shall be measured by the UE.

As long as the physical layer is configured for PRACH transmission, the UE shall continuously recalculate the Preamble_Initial_Power when any of the broadcast parameters used in the above formula changes. The new Preamble_Initial_Power shall then be resubmitted to the physical layer.

For TDD the UE shall calculate the UL transmit power according to the following formulas for the PRACH preamble and dedicated channel respectively

$P_{PRACH} = L_{PCCPCH} + I_{BTS}$ + RACH Constant value

And for dedicated channels:

$P_{UE} = \alpha L_{PCCPCH} + (1-\alpha)L_0 + I_{BTS} + SIR_{TARGET}$ + DPCH Constant value

Where:

P_{PRACH} & P_{UE}: Transmitter power level in dBm,

L_{PCCPCH}: Measure representing path loss in dB (reference transmit power is broadcast on BCH).

L_0: Long term average of path loss in dB

I_{BTS}: Interference signal power level at cell's receiver in dBm, which is broadcasted on BCH

α: α is a weighting parameter which represents the quality of path loss measurements. α may be a function of the time delay between the uplink time slot and the most recent down link PCCPCH time slot. α is calculated at the UE.

SIR_{TARGET}: Target SNR in dB. A higher layer outer loop adjusts the target SIR

RACH Constant value: This value shall be read on system infomration

DPCH Constant value: This value shall be read on system infomration

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99h37)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	040	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 1999-11-03

Subject: Support for DS-41 Initial UE Identity

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The DS-41 system requires different UE id types in the information element that identifies the UE at the request of an RRC connection.

Clauses affected: 10.2.3.4

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.2.3.4 Initial UE identity

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE UE id type	M			
IMSI (GSM-MAP)			TS 24.008	
TMSI (GSM-MAP)			TS 24.008	
P-TMSI			TS 24.008	
IMEI			TS 24.008	
ESN (DS-41)			TIA/EIA/IS-2000-4	
IMSI (DS-41)			TIA/EIA/IS-2000-4	
IMSI and ESN (DS-41)			TIA/EIA/IS-2000-4	
TMSI (DS-41)			TIA/EIA/IS-2000-4	
LAI	~~C newLA~~O		TS 24.008	
RAI	~~C newRA~~O		TS 24.008	

CHOICE *UE Id Type*	**Condition under which the given** *UE Id Type* **is used**
IMSI (GSM-MAP)	See section 8.5.1
TMSI (GSM-MAP)	See section 8.5.1
P-TMSI	See section 8.5.1
IMEI	See section 8.5.1
ESN (DS-41)	See section 8.5.1
IMSI (DS-41)	See section 8.5.1
IMSI and ESN (DS-41)	See section 8.5.1
TMSI (DS-41)	See section 8.5.1

~~**Condition**~~	~~**Explanation**~~
~~*NewLA*~~	~~See section 8.5.1~~
~~*NewRA*~~	~~See section 8.5.1~~

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

Document* *(R2-99k41)
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	042r2	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 03.12.99

Subject: Integration of Cell Broadcast Service (CBS)

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:
This CR incorporates the CBS feature into RRC. This is
– configuration of CTCH occasions
- the description of the UE behaviour in the CONNECTED mode when staying in RRC states CELL_PCH and URA_PCH.

Clauses affected: 8.5.7.3.x, 9.3.3, 9.3.4

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.5.7.3.x Configuration of CTCH occasions

A CTCH is mapped onto only one S-CCPCH which is the same as carrying the PCH.

The CTCH occasions are identified by the first radio frame of the TTI which can contain CTCH data. The CTCH occasions are fixed on the system frame number cycle 0 .. 4095 (i.e. no modulo calculation) and thus repeated cyclically.

The CTCH occasions are determined by a set of parameters.

M_{TTI}: number of radio frames in the TTI of the FACH used for CTCH

N: period of CTCH allocation on S-CCPCH, integer number of radio frames,
$M_{TTI} \leq N \leq$ MaxSFN – K, where N is a multiple of M_{TTI} (cf. 3G TS 25.212 and 3G TS 25.222).

MaxSFN: maximum system frame number = 4096 (cf. 3G TS 25.402).

K: CBS frame offset, integer number of radio frames $0 \leq K \leq N-1$ where K is a multiple of M_{TTI}.

The CTCH occasions are calculated as follows:

SFN = (K + m N) , m = 0, 1,..., M, M chosen that K+mN ≤ MaxSFN.

The parameters N and K are broadcast as system information.

9.3.3 CELL_PCH state

The CELL_PCH state is characterised by:

- No dedicated physical channel is allocated to the UE
- The UE uses DRX for monitoring a PCH via an allocated PICH.
- No uplink activity is possible.
- The position of the UE is known by UTRAN on cell level according to the cell where the UE last made a cell update in CELL_FACH state.

In this state the UE shall perform the following actions:

- monitor the paging occasions according to the DRX cycle and receive paging information on the PCH
-
- listens to the BCH transport channel of the serving cell for the decoding of system information messages
- initiates a cell update procedure on cell change.
- A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in the CELL_PCH RRC state.

The DCCH logical channel cannot be used in this sub. If the network wants to initiate any activity, it needs to make a paging request on the PCCH logical channel in the known cell to initiate any downlink activity.

9.3.3.1 Transition from CELL_PCH to CELL_FACH state

The UE is transferred to CELL_FACH state either by paging from UTRAN or through any uplink access.

9.3.3.2 Radio Resource Allocation Tasks (CELL_PCH)

In CELL_PCH state no resources have been granted for data transmission. For this purpose, a transition to another state has to be executed.

The UE may use Discontinuous Reception (DRX) in order to reduce power consumption. When DRX is used the UE needs only to receive at one paging occasion per DRX cycle. The UE may be instructed to use a specific DRX cycle length by the network. The UE shall determine its paging occasions in the same way as for Idle Mode, see [4].

9.3.3.3 RRC Connection mobility tasks (CELL_PCH)

In the CELL_PCH state, the UE mobility is performed through cell reselection procedures, which may differ from the one defined in [4].

The UE shall perform cell reselection and upon selecting a new UTRA cell, it shall move to CELL_FACH state and initiate a cell update procedure in the new cell. After the cell update procedure has been performed, the UE shall change its state back to CELL_PCH state if neither the UE nor the network has any more data to transmit.

Upon selecting a new cell belonging to another radio access system than UTRA, the UE shall enter idle mode and make an access to that system according to its specifications.

In case of low UE activity, UTRAN may want to reduce the cell updating overhead by ordering the UE to move to the URA_PCH State. This transition is made via the CELL_FACH state. UTRAN may apply an inactivity timer, and optionally, a counter, which counts the number of cell updates e.g. UTRAN orders the UE to move to URA_PCH when the number of cell updates has exceeded certain limits (network parameter).

9.3.3.4 UE Measurements (CELL_PCH)

The UE shall perform measurements and transmit measurement reports according to the measurement control information.

The UE shall use the measurement control information according to the system information when no UE dedicated measurement control information has been assigned.

9.3.3.5 Transfer and update of system information (CELL_PCH)

The UE shall read the BCH to acquire valid system information. For each acquisition, the UE may need different combinations of system information broadcast on BCH. The scheduling on the broadcast channel is done in such way that the UE knows when the requested information can be found.

9.3.4 URA_PCH State

The URA_PCH state is characterised by:

- No dedicated channel is allocated to the UE
- The UE uses DRX for monitoring a PCH via an allocated PICH.
- No uplink activity is possible
- The location of the UE is known on UTRAN Registration area level according to the URA assigned to the UE during the last URA update in CELL_FACH state.

In this state the UE performs the following actions:

- monitor the paging occasions according to the DRX cycle and receive paging information on the PCH

- listens to the BCH transport channel of the serving cell for the decoding of system information messages
- initiates a URA updating procedure on URA change.
- A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in the URA_PCH RRC state.

The DCCH logical channel cannot be used in this state. If the network wants to initiate any activity, it needs to make a paging request on the PCCH logical channel within the URA where the location of the UE is known. If the UE needs to transmit anything to the network, it goes to the CELL_FACH state. The transition to URA_PCH State can be controlled with an inactivity timer, and optionally, with a counter which counts the number of cell updates. When the number of cell updates has exceeded certain limits (a network parameter), then the UE changes to the URA_PCH State.

URA updating is initiated by the UE which, upon the detection of the Registration area, sends the network the Registration area update information on the RACH of the new cell.

9.3.4.1 Transition from URA_PCH State to Cell_FACH State (URA_PCH)

Any activity causes the UE to be transferred to CELL_ FACH State. Uplink access is performed by RACH .

Note that the release of an RRC connection is not possible in the URA_PCH State. The UE will first move to Cell_FACH State to perform the release signalling.

9.3.4.2 Radio Resource Allocation Tasks (URA _PCH)

In URA_PCH State no resources have been granted for data transmission. For this purpose, a transition to CellFACH State has to be executed.

The UE may use Discontinuous Reception (DRX) in order to reduce power consumption. When DRX is used the UE needs only to receive at one paging occasion per DRX cycle. The UE may be instructed to use a specific DRX cycle length by the network. The UE shall determine its paging occasions in the same way as for Idle Mode, see [4].

9.3.4.3 RRC Connection mobility tasks (URA_PCH)

In URA_PCH State the location of a UE is known on UTRAN Registration area level.

In this state, the UE mobility is performed through URA reselection procedures, which may differ from the definitions in S2.04. The UE shall perform cell reselection and upon selecting a new UTRA cell belonging to an URA which does not match the URA used by the UE, the UE shall move to CELL_FACH state and initiates a URA update towards the network. After the URA update procedure has been performed, the UE shall change its state back to URA_PCH state if neither the UE nor the network has any more data to transmit.

Upon selecting a new cell belonging to another radio access system than UTRA, the UE shall enter idle mode and make an access to that system according to its specifications (FFS).

9.3.4.4 UE Measurements (URA_PCH)

The UE shall perform measurements and transmit measurement reports according to the measurement control information.

The UE shall use the measurement control information according to the system information when no UE dedicated measurement control information has been assigned.

9.3.4.5 Transfer and update of system information (URA_PCH)

The same mechanisms to transfer and update system information as for state CELL_PCH are applicable for UEs in URA_PCH state, see section **Error! Reference source not found.**.

3GPP TSG-RAN Meeting #6

Nice, France, 13-15 December 1999

Document (R2-99h25)

e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	045	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG
list expected approval meeting # here ↑		for information		non-strategic		use only)

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2		**Date:**	16 Nov 1999	
Subject:	Modification to the Transport Format Combination Control message				
Work item:					

Category:			**Release:**	
(only one category shall be marked with an X)	F	Correction		Phase 2	
	A	Corresponds to a correction in an earlier release		Release 96	
	B	Addition of feature	X	Release 97	
	C	Functional modification of feature		Release 98	
	D	Editorial modification		Release 99	X
				Release 00	

Reason for change:	• This CR contains modifications to the Transport Format Combination control message and procedure.
Clauses affected:	8.2.5.2, 8.2.5.3, 10.1.5.16, 10.2.6

Other specs affected:			
	Other 3G core specifications		→ List of CRs:
	Other GSM core specifications		→ List of CRs:
	MS test specifications		→ List of CRs:
			→ List of CRs:
	O&M specifications		→ List of CRs:

Other comments:	

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.2.5 Transport format combination control

Figure 1. Transport format combination control, normal flow

General

The transport format combination control procedure is used to control the allowed uplink transport format combinations within the transport format combination set.

8.2.5.2 Initiation

The UTRAN shall transmit the TRANSPORT FORMAT COMBINATION CONTROL message on the ~~donwlink~~ downlink DCCH using AM or UM RLC.

To change the sub-set of allowed transport format combinations, the UTRA shall set the allowed TFCs in the IE "TFC subset". The network can optionally specify the duration for which a new TFC sub-set applies. The network shall do this by using the IE "TFC Control duration".

To completely remove the previous restrictions of allowed transport format combinations, the UTRAN shall set the "full transport format combination" in the IE "TFC subset".

8.2.5.3 Reception of a TRANSPORT ~~CHANNEL~~ FORMAT COMBINATION CONTROL message by the UE

Upon reception of the TRANSPORT ~~CHANNEL~~ FORMAT COMBINATION CONTROL message, the UE shall ~~configure the allowed transport format combinations as defined in subclause 8.5.7.5.3~~determine whether the IE "TFC Control duration" is included.

If the IE "TFC Control duration" is not included then the UE shall:

- Store the newly specified TFC (sub)set in the variable to be called 'default TFC (sub)set'
- Configure the allowed transport format combinations as defined in subclause 8.5.7.5.3

If the IE "TFC Control duration" is included in the message then:

- The TFC set or TFC sub-set specified in the message shall be activated at frame $n + z$ where n is the frame (with 10 ms resolution) at which the UE received the message and z is specified in TR 25.926 (UE radio access capabilities). The specified TFC set or sub-set shall then be applied for the number of (10 ms) frames specified in the IE "TFC Control duration".

If no further TFC Control messages are received during this interval then:

- At the end of the defined period the UE shall change the TFC (sub)set back to the ‘default TFC (sub)set'.

If further TFC Control messages are received during the 'TFC Control duration' period then the UE shall re-configure itself in accordance with the TFC (sub)set defined in the most recently received message.

10.1.5.16 TRANSPORT FORMAT COMBINATION CONTROL

<Functional description of this message to be included here>
RLC-SAP: TM, AM or UM
Logical channel: DCCH
Direction: UTRAN→UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	C-notTM			
TrCH information elements				
TFC subset	M			For uplink TFCS
TFC Control duration	C-not TMopt			

Condition	Explanation
NotTM	The message type is not included when transmitting the message on the transparent mode signalling DCCH
NotTMopt	The information element is not included when transmitting the message on the transparent mode signalling DCCH and is optional otherwise.

10.2.6.X TFC Control duration

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
TFC Control duration	M		Integer (1..16)	Defines the period in multiples of 10 ms frames for which the defined TFC sub-set is to be applied.

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99h26)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	046	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 15/11/1999

Subject: New Information elements and modifications to messages required in order to support configuration and re-configuration of the DSCH in FDD mode

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The current specification does not describe the IE's required for (re)configuration of the DSCH in FDD mode. Nor does it specify the messages in which these IE's will be carried or the changes to the corresponding procedures.

Clauses affected: 8.2.1.3, 10.1.5.10, 8.2.2.3, 8.2.2.4, 10.1.5.4, 8.2.3.3, 10.1.5.7, 8.2.4.3, 8.2.4.4, 10.1.5.13, 8.2.6.3, 8.2.6.4, 10.1.5.1, 8.3.4.2, 10.1.1.1, 8.5.7, 10.2.6

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

Modification to the radio bearer setup procedure

8.2.1.3 Reception of a RADIO BEARER SETUP message by the UE

Upon reception of a RADIO BEARER SETUP message the UE shall perform actions as specified below and transmit a RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC. When the transmission of the RADIO BEARER SETUP COMPLETE message has been confirmed by RLC the procedure ends.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall

- For the new radio bearer(s), use the multiplexing option applicable for the transport channels used according to the IE “RB mapping info”
- For radio bearer(s) existing prior to the message, use the multiplexing option applicable for the transport channels used, according to their IE “RB mapping info” or their previously stored multiplexing options.
- Configure MAC multiplexing if that is needed in order to use said transport channel(s).
- Use MAC logical channel priority when selecting TFC in MAC.

If the IE “New C-RNTI” is included, the UE shall

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If neither the IE “PRACH info” nor the IE “Uplink DPCH info” is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE “Secondary CCPCH info” nor the IE “Downlink DPCH info” is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

If the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in Section 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE “TFS” is included or previously stored in the UE for that transport channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete stored TFS and use the TFS given in system information

The UE shall enter a state according to 8.5.8.

Modification to the radio bearer setup message

10.1.5.10 RADIO BEARER SETUP

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
CN information elements				
NAS binding info	M			
CN domain identity				
UE Information elements				
Activation time	O			
New C-RNTI	C – RACH/FACH		C-RNTI	
UTRAN DRX cycle length	O			
DRX Indicator	O			
RB information elements				
Information for new RBs		1 to <MaxNewRBcount>		
RB identity	M			
RLC info	M			
RB mapping info	M			
Information for other RB's affected by this message		0 to <MaxOtherRBcount>		
RB identity	M			
RB mapping info	M			
Transport Channel Information Elements				
TFCS	O			for uplink TFCS
TFCS	O			for downlink TFCS
CHOICE *mode*				
TDD				
TFCS Identity	O			Uplink TFCS
TFCS Identity	O			Downlink TFCS
TFC subset	O			for DCHs in uplink
Uplink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		editor should this be FFS also?
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
DRAC information	C DRAC	1 to <MaxReconAddTrCH>		
Dynamic Control				
Transmission time validity				
Time duration before retry				
Silent period duration before release				
Downlink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		FFS
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
Physical Channel information elements				
Frequency info	O			
Maximum allowed UL TX power	O			

Uplink DPCH power control info	O			
Uplink radio resource information	O			
CHOICE *mode*				
FDD				
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
CHOICE channel requirement	O			
Uplink DPCH info				
PRACH Info (for RACH)				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
Downlink radio resource information				
Downlink DPCH power control info	O			
CHOICE *mode*				
FDD				
Downlink DPCH compressed mode info	O			
PDSCH with SHO DCH Info	O			
PDSCH code mapping	O			
Downlink information		0 to <Max RLcount>		Send downlink information for each radio link
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS
SSDT Cell ID	C ifSSDT			FFS
Gated Transmission Control info	O			FFS
Default DPCH Offset Value	O			
TDD				
Uplink Timing Advance	O			

Condition	**Explanation**
RACH/FACH	This information element is only sent when using RACH/FACH
IfSSDT	This IE is only sent when SSDT is used and when a new DCH is being activated

Range Bound	Explanation
MaxRLcount	Maximum number of radio links
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconAddcount	Maximum number of Transport CHannels reconfigured or added
MaxNewRBcount	Maximum number of RBs that could be setup with this message
MaxOtherRBcount	Maximum number of Other RBs (ie RB's not being released) affected by the procedure

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info (for FAUSCH)	
PRACH info (for RACH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

Note 3: The activation time should be present when the Gated Transmission control info is present in this message.

Modification to the radio bearer reconfiguration procedure

8.2.2.3 Reception of RADIO BEARER RECONFIGURATION by the UE in CELL_DCH state

Upon reception of a RADIO BEARER RECONFIGURATION message in CELL_DCH state, the UE shall perform actions specified below.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall

- For each reconfigured radio bearer or signalling link, use the multiplexing option applicable for the transport channels used according to the IE “RB mapping info”
- Configure MAC multiplexing if that is needed in order to use said transport channel(s).
- Use MAC logical channel priority when selecting TFC in MAC.
- Suspend or resume uplink transmission for each radio bearer, as indicated by the IE "RB suspend/resume" information element.

If neither the IE “PRACH info” nor the IE “Uplink DPCH info” is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in.

If neither the IEs “Secondary CCPCH info” nor “Downlink DPCH info” is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

If the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in Section 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE “TFS” is included or previously stored in the UE for that transport channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete stored TFS and use the TFS given in system information

If the IE “Primary CCPCH info” and the IE “New C-RNTI” are included, the UE shall

- Select the cell indicated by the IE “Primary CCPCH info”.
- Use the given C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. When the transmission of the RADIO BEARER RECONFIGURATION COMPLETE message has been confirmed by RLC, the procedure ends.

If the RADIO BEARER RECONFIGURATION message is used to initiate a transition from CELL_DCH to CELL_FACH state, the RADIO BEARER RECONFIGURATION COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition.

8.2.2.4 Reception of an RADIO BEARER RECONFIGURATION message by the UE in CELL_FACH state

Upon reception of a RADIO BEARER RECONFIGURATION message in CELL_FACH state, the UE shall perform actions specified below.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall

- For each reconfigured radio bearer or signalling link, use the multiplexing option applicable for the transport channels used according to the IE “RB mapping info”
- Configure MAC multiplexing if that is needed in order to use said transport channel(s).
- Use MAC logical channel priority when selecting TFC in MAC.
- Suspend or resume uplink transmission for each radio bearer, as indicated by the IE "RB suspend/resume".

If the IE “New C-RNTI” is included, the UE shall

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If neither the IE “PRACH info” nor the IE “Uplink DPCH info” is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink

If neither the IE “Secondary CCPCH info” nor the IE “Downlink DPCH info” is included, the UE shall

If the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included then the UE shall act upon the 'PDSCH code mapping' IE as specified in Section 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted (there being only one link in the active set).

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE “TFS” is included or previously stored in the UE for that transport channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete stored TFS and use the TFS given in system information

The UE shall enter a state according to 8.5.8.

The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. When the transmission of the RADIO BEARER RECONFIGURATION COMPLETE message has been confirmed by RLC, the procedure ends.

Modification to the radio bearer reconfiguration message

10.1.5.4 RADIO BEARER RECONFIGURATION

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

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE Information elements				
Activation time	O			
New C-RNTI	C - RACH/FACH			
UTRAN DRX cycle length	O			
DRX Indicator	O			
RB information elements				
RB information		0 to <MaxRBcount>		RB information is sent for each RB affected by this message
RB identity	M			
RLC info	O			FFS
RB mapping info	O			
RB suspend/resume	O			Not applicable to the signalling bearer.

Transport Channel Information Elements				
TFCS	O			for uplink TFCS
TFCS	O			for downlink TFCS
CHOICE *mode*				
TDD				
TFCS Identity	O			Uplink TFCS
TFCS Identity	O			Downlink TFCS
TFC subset	O			for TFCSs in uplink
Uplink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
DRAC information	C DRAC	1 to <MaxReconAddTrCH>		
Dynamic Control				
Transmission time validity				
Time duration before retry				
Silent period duration before release				
Downlink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		
Transport channel identity	M			
TFS	M			
Physical Channel information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information	O			
CHOICE channel requirement	O			
Uplink DPCH info				
PRACH info (for RACH)				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
Downlink radio resource information				
CHOICE *mode*				
FDD				
PDSCH with SHO DCH Info	O			
PDSCH code mapping	O			
Downlink DPCH power control info	O			
Downlink DPCH compressed mode info	O			
Downlink information		0 to <Max		Send downlink information for

		RLcount>		each radio link
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
Gated Transmission Control info	O			FFS, Note 3
Default DPCH Offset Value	O			
TDD				
Uplink Timing Advance	O			

Condition	**Explanation**
RACH/FACH	This information element is only sent when using RACH/FACH
DRAC	These information elements are only sent for transport channels which use the DRAC procedure

Range Bound	**Explanation**
MaxRLcount	Maximum number of radio links
MaxRBcount	Maximum number of RBs to be reconfigured
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconAddTrCH	Maximum number of transport channels to add and reconfigure

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info (for RACH)	
PRACH info (for FAUSCH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

Note 3: The activation time should be present when the Gated Transmission control info is present in this message.

Modification to the radio bearer release procedure

8.2.3.3 Reception of RADIO BEARER RELEASE by the UE

Upon reception of a RADIO BEARER RELEASE message the UE shall perform the following.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall

- For the released radio bearer(s), delete all stored multiplexing options
- For all remaining radio bearer(s), use the multiplexing option applicable for the transport channels used according to their IE “RB mapping info” or their previously stored multiplexing options.
- Configure MAC multiplexing if that is needed in order to use said transport channel(s).
- Use MAC logical channel priority when selecting TFC in MAC.

If the IE “New C-RNTI” is included, the UE shall

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If neither the IE “PRACH info” nor the IE “Uplink DPCH info” is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE “Secondary CCPCH info” nor the IE “Downlink DPCH info” is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

If the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in Section 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE “TFS” is included or previously stored in the UE for that transport channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete stored TFS and use the TFS given in system information
- If the RADIO BEARER RELEASE message is used to initiate a state transition to the CELL_FACH state and if an IE primary CCPCH info and C-RNTI to a given cell is included, the UE shall elect the cell indicated by the PCCPCH info IE.
- Use the C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC. When the transmission of the RADIO BEARER RELEASE COMPLETE message has been confirmed by RLC the procedure ends.

If the RADIO BEARER RELEASE message is used to initiate a transition from CELL_DCH to CELL_FACH state, the RADIO BEARER RELEASE COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition.8.2.3.4 Unsupported configuration in the UE

Modification to the radio bearer release message

10.1.5.7 RADIO BEARER RELEASE

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE Information elements				
Activation time	O			
New C-RNTI	C - RACH/FACH		C-RNTI	
UTRAN DRX cycle length	O			
DRX Indicator	O			
RB information elements				
RB identity		1 to <MaxRelRBcount>		
RB identity		0 to <MaxOtherRBcount>		
RB mapping info	O			
Transport Channel Information Elements				
TFCS	O			for uplink TFCS
TFCS	O			for downlink TFCS
CHOICE *mode*				
TDD				
TFCS Identity	O			Uplink TFCS
TFCS Identity	O			Downlink TFCS
TFC subset	O			for DCHs in uplink
Uplink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddFFSTrCH>		
Transport channel identity	M			
TFS	M			
DRAC information	C DRAC	1 to <MaxReconAddFFSTrCH>		
Dynamic Control				
Transmission time validity				
Time duration before retry				
Silent period duration before release				
Downlink transport channels				
Transport channel identity		0 to <MaxDelTrCH>		
Reconfigured TrCH information		0 to <MaxReconAddTrCH>		Editor : this limit should probably also be MaxReconAddFFSTrCH
Transport channel identity	M			
TFS	M			
Physical Channel information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information	O			
CHOICE *mode*				
FDD				
Gated Transmission Control	O, FFS			Note 3

info				
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
TDD				
Uplink Timing Advance	O			
CHOICE channel requirement	O			
Uplink DPCH info				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
PRACH info (for RACH)				
Downlink radio resource information				
CHOICE *mode*				
FDD				
PDSCH with SHO DCH Info	O			
PDSCH code mapping	O			
Downlink information		0 to <Max RLcount>		Send downlink information for each radio link to be set-up
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				

Condition	**Explanation**
RACH/FACH	This information element is only sent when using RACH/FACH
DRAC	These information elements are only sent for transport channels which use the DRAC procedure

Range Bound	**Explanation**
MaxRLcount	Maximum number of radio links
MaxDelRBcount	Maximum number of RBs to be released/deleted
MaxOtherRBcount	Maximum number of Other RBs (ie RB's not being released) affected by the procedure
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconAddFFSTrCH	Maximum number of transport channels to add (FFS) and reconfigure

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH Info (for RACH)	
PRACH info (for FAUSCH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

Note 3: The activation time should be present when the Gated Transmission control info is present in this message.

Modification to the transport channel reconfiguration procedure

8.2.4.3 Reception of an TRANSPORT CHANNEL RECONFIGURATION message by the UE in CELL_DCH state

Upon reception of a TRANSPORT CHANNEL RECONFIGURATION message in CELL_DCH state, the UE shall perform the following actions.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If neither the IE “PRACH info” nor the IE “Uplink DPCH info” is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE “Secondary CCPCH info” nor the IE “Downlink DPCH info” is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

If the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in Section 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If the IE “TFS” is neither included nor previously stored in the UE for that transport channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete stored TFS and use the TFS given in system information

If the TRANSPORT CHANNEL RECONFIGURATION message is used to initiate a state transition to the CELL_FACH state and if the IE “Primary CCPCH info” and IE “New C-RNTI” to a given cell is included, the UE shall

- Select the cell indicated by the IE “Primary CCPCH info”.
- Use the C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. If the TRANSPORT CHANNEL RECONFIGURATION message is used to initiate a transition from CELL_DCH to CELL_FACH state, the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition. When the transmission of the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the procedure ends.

8.2.4.4 Reception of an TRANSPORT CHANNEL RECONFIGURATION message by the UE in CELL_FACH state

Upon reception of a TRANSPORT CHANNEL RECONFIGURATION message in CELL_FACH state, the UE shall perform the following

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If the IE “New C-RNTI” is included, the UE shall

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If neither the IE “PRACH info” nor IE “Uplink DPCH info” is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink

If neither the IE “Secondary CCPCH info” nor IE “Downlink DPCH info” is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

If the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included then the UE shall act upon the 'PDSCH code mapping' IE as specified in Section 8.5.7 and:

Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted (there being only one link in the active set).

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If the IE “TFS” is neither included nor previously stored in the UE for that transport channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete stored TFS and use the TFS given in system information

The UE shall enter a state according to 8.5.8.

The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. When the transmission of the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the procedure ends.

Modification to the transport channel reconfiguration message

10.1.5.13 TRANSPORT CHANNEL RECONFIGURATION

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

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE Information elements				
Activation time	O			
New C-RNTI	C - RACH/FACH		C-RNTI	
UTRAN DRX cycle length	O			
DRX Indicator	O			
Transport Channel Information Elements				
TFCS	O			for uplink TFCS
TFCS	O			for downlink TFCS
CHOICE *mode*				
TDD				
TFCS Identity	O			Uplink TFCS
TFCS Identity	O			Downlink TFCS
TFC subset	O			for DCHs in uplink
Uplink transport channels				
Reconfigured TrCH information		0 to <MaxReconTrCH>		
Transport channel identity				
TFS				
DRAC information	C DRAC	1 to <MaxReconTrCHDRAC>		
Dynamic Control				
Transmission time validity				
Time duration before retry				
Silent period duration before release				
Downlink transport channels				
Reconfigured TrCH information		0 to <MaxReconTrCH>		
Transport channel identity				
TFS				
Physical Channel information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information				
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
CHOICE channel requirement	O			
Uplink DPCH info				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
PRACH info (for RACH)				
	O			
Downlink radio resource information				
Downlink DPCH power control info	O			
CHOICE *mode*				
FDD				
Downlink DPCH	O			

compressed mode info				
PDSCH with SHO DCH Info	O			
PDSCH code mapping	O			
Downlink information		0 to <Max RLcount>		Send downlink information for each radio link
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS
SSDT Cell ID	C ifSSDT			FFS
Gated Transmission Control info	O			FFS, Note 3
Default DPCH Offset Value	O			
TDD				
Uplink Timing Advance	O			

Condition	**Explanation**
IfSSDT	This IE is only sent when SSDT is used and when a new DCH is being activated
RACH/FACH	This information element is only sent when using RACH/FACH

Range Bound	**Explanation**
MaxRLcount	Maximum number of radio links to be set up
MaxReconcount	Maximum number of Transport CHannels reconfigured
MaxReconTrCHDRAC	Maximum number of Transport CHannels which are controlled by DRAC and which are reconfigured

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info (for RACH)	
PRACH info (for FAUSCH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

Note 3: The activation time should be present when the Gated Transmission control info is present in this message.

Modification to the physical channel reconfiguration procedure

8.2.6.3 Reception of a PHYSICAL CHANNEL RECONFIGURATION message by the UE in CELL_DCH state

Upon reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall perform the following actions.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If the IE “New C-RNTI” is included, the UE shall

- Use that C-RNTI when using common physical channels of type RACH, FACH and CPCH in the current cell.

If neither the IE “PRACH info” nor IE “Uplink DPCH info” is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE “Secondary CCPCH info” nor IE “Downlink DPCH info” is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

If the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in Section 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the physical channel(s) applicable for the physical channel types that is used. If IE “TFS” is neither included or previously stored in the UE for that physical channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete stored TFS and use the TFS given in system information

If the PHYSICAL CHANNEL RECONFIGURATION message is used to initiate a state transition to the CELL_FACH state and if an IE “Primary CCPCH info” and IE “New C-RNTI” to a given cell is included, the UE shall

- Select the cell indicated by the IE “Primary CCPCH info”.
- Use the C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. When the transmission of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the procedure ends.

If the PHYSICAL CHANNEL RECONFIGURATION message is used to initiate a transition from CELL_DCH to CELL_FACH state, the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition.

8.2.6.4 Reception of PHYSICAL CHANNEL RECONFIGURATION by the UE in CELL_FACH state

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If the IE “New C-RNTI” is included, the UE shall

- Use that C-RNTI when using common physical channels of type RACH, FACH and CPCH in the current cell.

If neither the IE “PRACH info” nor IE “Uplink DPCH info” is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE “Secondary CCPCH info” nor nor IE “Downlink DPCH info” is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

If the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included then the UE shall act upon the 'PDSCH code mapping' IE as specified in Section 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted (there being only one link in the active set).

The UE shall use the physical channel(s) applicable for the physical channel types that is used. If neither the IE “TFS” is included or previously stored in the UE for that physical channel(s), the UE shall

- Use the TFS given in system information

If none of the TFS stored is compatible with the physical channel, the UE shall

- Delete stored TFS and use the TFS given in system information

The UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. When the transmission of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall enter a state according to subclause 8.5.8 applied on the PHYSICAL CHANNEL RECONFIGURATION message. If the UE ends up in the CELL_PCH or URA_PCH state, it shall delete its C-RNTI. The procedure ends.

Modification to the physical channel reconfiguration message

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: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE Information elements				
Activation time	O			
New C-RNTI	C - RACH/FACH		C-RNTI	
UTRAN DRX cycle length	O			
DRX Indicator	O			
Physical Channel information elements				
Frequency info	O			
Maximum allowed UL TX power	O			
Uplink DPCH power control info	O			
Uplink radio resource information				
CHOICE channel requirement	O			
Uplink DPCH info				
PRACH Info (for RACH)				
CHOICE *mode*				
FDD				
PRACH info (for FAUSCH)				
Downlink radio resource information				
Downlink DPCH power control info	O			
CHOICE *mode*				
FDD				
Downlink DPCH compressed mode info	O			
PDSCH with SHO DCH Info	O			
PDSCH code mapping	O			
Downlink information		0 to <Max RLcount>		Send downlink information for each radio link
Primary CCPCH info				
Downlink DPCH info				
Secondary CCPCH info				For FACH
CHOICE *mode*				
FDD				
SSDT indicator	O			FFS
SSDT Cell ID	C ifSSDT			FFS
CPCH SET Info	O			UL/DL radio resource for CPCH control (Note2)
Default DPCH Offset Value	O			
TDD				
Uplink Timing Advance	O			

Condition	Explanation

IfSSDT	This IE is only sent when SSDT is used and when a new DCH is being activated
RACH/FACH	This information element is only included in the sent message when using RACH/FACH

Range Bound	**Explanation**
MaxRLcount	Maximum number of radio links to be set up

CHOICE *channel requirement*	**Condition under which the given *channel requirement* is chosen**
Uplink DPCH info	
PRACH info (for FAUSCH)	
PRACH info (for RACH)	

Note 2: How to map UL and DL radio resource in the message is FFS.

Modification to the active set update procedure

8.3.4 Active set update in soft handover

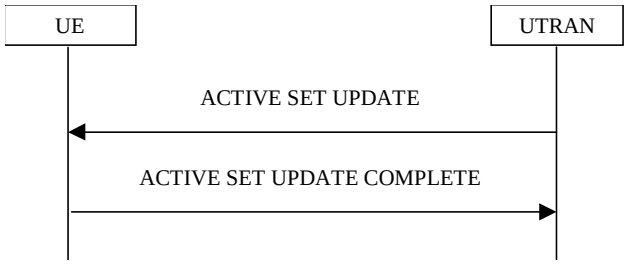


Figure 1. Active Set Update procedure, successful case

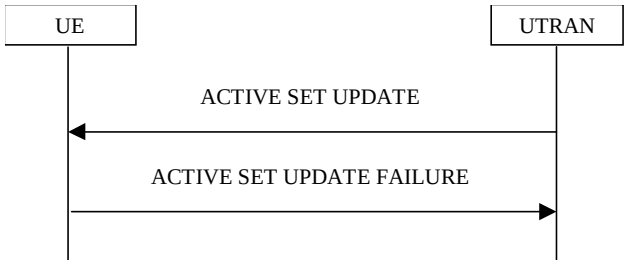


Figure 2. Active Set Update procedure, failure case

8.3.4.1GeneralThe purpose of the active set update procedure is to update the active set of the connection between the UE and UTRAN. This procedure shall be used in CELL_DCH state. The UE should keep on using the old RLs while allocating the new RLs. Also the UE should keep on using the transmitter during the reallocation process.

8.3.4.2 Initiation

The procedure is initiated when UTRAN orders a UE in CELL_DCH state, to make the following modifications of the active set of the connection.

a) Radio link addition

b) Radio link removal

c) Combined radio link addition and removal

In case a) and c), UTRAN should

- prepare new additional radio link(s) in the UTRAN prior to the command to the UE.

In all cases, UTRAN should

- send an ACTIVE SET UPDATE message on downlink DCCH using AM or UM RLC.

UTRAN should include the following information:

- IE “Radio Link Addition Information”: Downlink DPCH information and other optional parameters relevant for the additional radio links with Primary CCPCH info used for the reference ID to indicate which radio link to add. This IE is need in case a) and c).
- IE “Radio Link Removal Information”: Primary CCPCH info used for the reference ID to indicate which radio link to remove. This IE is need in case b) and c).

If SRNC relocation is performed simultaneously during active set update procedure when all radio links are replaced simultaneously, the UTRAN shall include the IE "U-RNTI" and IE “CN domain identity” and IE “NAS system information” in the ACTIVE SET UPDATE messages.

8.3.4.2 Reception of an ACTIVE SET UPDATE messages by the UE

- Upon reception of a ACTIVE SET UPDATE message the UE shall 8.3.4.2.1Message ACTIVE SET UPDATE contents to use

The UE shall

- at first, add the RLs indicated in the IE “Radio Link Addition Information”.
- remove the RLs indicated in the IE “Radio Link Removal Information” . If the UE active set is full or becomes full, an RL, which is indicated to remove, shall be removed before adding RL, which is indicated to add.
- If the ACTIVE SET UPDATE message includes the IE "U-RNTI",update its identity.
- If the ACTIVE SET UPDATE message includes the IE “CN domain identity” and the IE “NAS system information”, the UE shall forward the content of the IE to the non-access stratum entity of the UE indicated by the IE “CN domain identity”.

- If the ACTIVE SET UPDATE message includes the IE 'TFCI combining indicator' associated with a radio link to be added then the UE should configure Layer 1 to soft combine TFCI (field 2) of this new link with those links already in the TFCI (field 2) combining set.
- transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC. When the transmission of the ACTIVE SET UPDATE COMPLETE message has been confirmed by RLC the procedure ends on the UE side.

8.3.4.3 Abnormal case: Unsupported configuration in the UE

If UTRAN instructs the UE to use a configuration that it does not support, the UE shall

- Transmit a ACTIVE SET UPDATE FAILURE message on the DCCH using AM RLC.
- Set the IE “failure cause” to “configuration unacceptable”.

8.3.4.4 Reception of the ACTIVE SET UPDATE COMPLETE message by the UTRAN

When the UTRAN has received the ACTIVE SET UPDATE COMPLETE message,

- the UTRAN may remove radio link(s) which are indicated to remove to the UE in case b) and c)
- and the procedure ends on the UTRAN side.

8.3.4.5 Reception of the ACTIVE SET UPDATE FAILURE message by the UTRAN

When the UTRAN has received the ACTIVE SET UPDATE FAILURE message, the UTRAN may delete radio links which are indicated to add to the UE. The procedure ends on the UTRAN side.

Modification to the active set update message

10.1.1.1 ACTIVE SET UPDATE (FDD only)

<Functional description of this message to be included here>

RLC-SAP: AM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
UE information elements				
U-RNTI	O			New U-RNTI

Activation time	O			
Ciphering mode info	O			
CN information elements				
PLMN identity	O			(Note3)
CN related information		0 to <MaxNoCNdomains>		CN related information to be provided for each CN domain
CN domain identity	O			(Note3)
NAS system info	O			(Note3)
Phy CH information elements				
Maximum allowed UL TX power	O			
Radio link addition information		0 to <MaxAddRLcount>		Radio link addition information required for each RL to add
Primary CCPCH info	M			Note 1
SSDT cell identity	C - ifSSDT			
Downlink DPCH info	M			
TFCI combining indicator	O			
Radio link removal information		0 to <MaxDelRLcount>		Radio link removal information required for each RL to remove
Primary CCPCH info	M			Note 1
Gated Transmission Control Info	O			FFS, Note 2
SSDT indicator	O			

Condition	**Explanation**
IfSSDT	This IE is only sent when SSDT is being used and a new radio link is added

Range bound	**Explanation**
MaxAddRLcount	Maximum number of radio links which can be added
MaxDelRLcount	Maximum number of radio links which can be removed/deleted

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

*Note 2: The activation time should be present when the Gated Transmission control info is present in this message.*Note3: Necessity of PLMN is FFS and for CN domain identity and NAS system information, the confirmation in SA WG2 is needed.

Changes to Section 8.5.7

8.5.7 Generic actions on receipt of an information element

8.5.7.1 CN information elements

8.5.7.2 UTRAN mobility information elements

8.5.7.3 UE information elements

8.5.7.3.1 Activation time

If the IE “Activation time” is present, the UE shall

- activate the new configuration present in the same message as this IE at the indicated time.

[Note: The new configuration is typically a dedicated physical channel present in the same message as the “Activation time” IE.]

8.5.7.3.6 UTRAN DRX Cycle length

The UE may use Discontinuous Reception (DRX) in Cell_PCH or URA_PCH state in order to reduce power consumption. When DRX is used the UE needs only to monitor at one PICH Monitoring Occasion within one Paging Occasion per DRX cycle. The UE shall determine its paging occasions in the same way as for Idle Mode, see TS 25.304 for further details and definitions. If the IE “UTRAN DRX cycle length is included, the UE shallstore that value as the current UTRAN DRX Cycle length

8.5.7.3.7 DRX Indicator

If the IE "DRX Indicator" is included and set to ‘DRX with cell updating’, the UE shalluse the current UTRAN DRX Cycle length as DRX cycle length in the formulas for calculating Paging Occasion and PICH Monitoring Occasion.

If the IE "DRX Indicator" is included and is set to ‘no DRX’ the UE shall stop using DRX.

8.5.7.3.8 Ciphering mode info

If the IE “Ciphering mode info” is present, the UE shall check the IE “Ciphering mode command” as part of the IE “Ciphering mode info”, and perform the following:

- If IE “Ciphering mode command” has the value “start/restart”, the UE shall start or restart ciphering, using the ciphering algorithm (UEA [TS 33.102]) indicated by the IE “Ciphering algorithm” at the time indicated by the IE “Ciphering activation time”, both contained in the IE “Ciphering mode info”. If a new ciphering key have been received, the new ciphering key shall be used at a restart.
- If IE “Ciphering mode command” has the value “modify”, the UE shall change to the ciphering algorithm (UEA [TS 33.102]) indicated by the IE “Ciphering algorithm” contained in the IE “Ciphering mode info”.
- If the IE “Ciphering mode command” has the value “stop”, the UE shall stop using ciphering.

If the IE “Ciphering mode info” is not present, the UE shall not change the ciphering configuration.

8.5.7.4 Radio bearer information elements

8.5.7.4.1 RB mapping info

If the IE “RB identity” and the IE “RB mapping info” are included, the UE shall

- If any, delete all previously stored multiplexing options for that radio bearer.
- Store each new multiplexing option for that radio bearer.

8.5.7.4.2 RLC Info

If the IE “RB identity” and the IE “RLC Info” are included, the UE shall

- Configure the transmitting and receiving RLC entities in the UE for that radio bearer accordingly.

8.5.7.5 Transport channel information elements

8.5.7.5.1 Transport Format Set

If the IE “transport channel identity” and the IE “Transport format set” is included, the UE shall

- store the transport format set for that transport channel.

8.5.7.5.2 Transport format combination set

If the IE “Transport format combination set” is included, the UE shall

- start to respect those transport format combinations.

8.5.7.5.3 Transport format combination subset

If the IE “Transport format combination subset” is included, the UE shall

- restrict the transport format combination set to that transport format combination subset. If the transport format combination subset indicates the “full transport format combination set” any restriction on transport format combination set is released and the UE may use the full transport format combination set.

8.5.7.6 Physical channel information elements

8.5.7.6.1 Frequency info

If the IE “Frequency info” is included the UE shall

- Store that frequency as the active frequency and
- Tune to that frequency.

If the IE “Frequency info” is not included and the UE has a stored active frequency, the UE shall

- Continue to use the stored active frequency

If the IE “Frequency info” is not included and the UE has no stored active frequency, it shall

- map any used physical channels on the frequency given in system information as default

8.5.7.6.2 PRACH info

If the IE “PRACH info” is included, the UE shall

- Release any active dedicated physical channels in the uplink and
- let the PRACH be the default in the uplink for RACH

8.5.7.6.3 Secondary CCPCH info

If the IE “Secondary CCPCH info” is included and the IE “PICH info” is not included, the UE shall

start to receive that Secondary CCPCH in the downlink.

8.5.7.6.4 Uplink DPCH info

If the IE “Uplink DPCH info” is included, the UE shall

release any active uplink physical channels and activate the given physical channels.8.5.7.6.5 Downlink DPCH info

If the IE “Downlink DPCH info” is included, the UE shall

- Activate the dedicated physical channels indicated by that IE

8.5.7.6.6 Maximum allowed UL TX power

If the IE “Maximum allowed UL TX power” is included, the UE shall

- Keep the UE uplink transmit power below the indicated power value. If the current UE uplink transmit power is above the indicated power value, the UE shall decrease the power to a level below the power value.

8.5.7.6.7 PDSCH with SHO DCH Info (FDD only)

If the IE 'PDSCH with SHO DCH Info' is included, the UE shall

- Configure itself such that when an allocation on the DSCH is made it will receive the PDSCH from the specified BS within the active set

- Configure the Layer 1 to only soft combine the DPCCH TFCI(field 2) of the radio links within the associated DCH active set which are specified

- Infer that the set of radio links for which TFCI (field 2) should be soft combined will include all radio links within the active set if the IE 'TFCI combining set' is not included and the sending of the message in which the IE 'PDSCH with SHO DCH Info' is being used will result in a transport channel switch from a state in which the DSCH transport channel was not available to a state in which it is available.

8.5.7.6.8 PDSCH code mapping (FDD only)

If the IE 'PDSCH code mapping' is included, the UE shall

- Configure Layer 1 to support the mapping of TFCI(field 2) values to PDSCH channelisation codes as specified in the IE.

New information elements

Three new Physical CH information elements are required, these should be inserted in 25.331 in new sections:

10.2.6.X PDSCH code mapping (FDD only)

This indicates the association between each possible value of TFCI(field 2) and the corresponding PDSCH channelisation code.

10.2.6.Y PDSCH with SHO DCH Info (FDD only)

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
DSCH radio link identifier	M		Integer(0..511)	This parameter indicates on which radio link the user will be allocated resource on the DSCH. The CPICH scrambling code will be used for this purpose.
TFCI Combining set				This is used to indicate which of the downlink TFCI(field 2) transmissions made on the DPCCH's within the active set should be soft combined on the physical layer.
Radio link identifier		0 to <MaxCombineSet>	Integer(0..511)	The CPICH scrambling code is used for this purpose

Range Bound	Explanation
MaxCombineSet	Maximum number of radio links in the DCH active set transmitted from BS's under the CRNC from which the DSCH is being scheduled

10.2.6.Z TFCI Combining Indicator (FDD only)

This IE indicates whether the TFCI (field 2) which will be transmitted on the DPCCH of a newly added radio link should be soft combined with the others in the TFCI (field 2) combining set. This IE is only sent when the UE is in Cell_DCH state with a DSCH transport channel assigned.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
TFCI combining indicator	M		Boolean	

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99h29)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	049	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-RAN#6 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 1999-11-17

Subject: Description of CN dependent IEs in Master Information Block

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	X
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: The DS-41 system requires that ANSI-41 system information elements be sent instead of .GSM-MAP system information element(s).

Clauses affected: 8.1.1.3.1, 10.1.6.4.2, 10.2.9 (new), 10.2.9.6 (new), 10.2.9.7 (new), 10.2.9.8 (new), 10.2.9.9 (new),

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments: The chapter numbers(10.2.9, 10.2.9.x) have dependancy on CR041.

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.1.1.3.1 Reception of SYSTEM INFORMATION messages broadcast on a BCH transport channel

When selecting a new cell, the UE shall read the master information block. The UE may use the pre-defined scheduling information to locate the master information block in the cell.

On reception of the master information block, the UE shall

- ~~check the IE "PLMN identity" in the master information block and verify that it is the selected PLMN.~~If SELECTED_CN has the value "GSM-MAP" and the IE "CN Type" has the value "GSM-MAP" or "GSM-MAP AND ANSI-41", the UE shall. check the IE "PLMN identity" in the master information block and verify that it is the selected PLMN.
- If SELECTED_CN has the value "ANSI-41 "and the IE "CN Type" has the value "ANSI-41" or "GSM-MAP AND ANSI-41", the UE shall store the ANSI-41 Information elements contained in the master information block and perform initial process for ANSI-41.
- store the "value tag" sent in the variable VALUE TAG for the master information block.
- check the IE "value tag" for all system information blocks which are to be used by the UE. If, for any system information blocks, the value tag is different from the value of the variable VALUE_TAG for that system information block or if no corresponding system information block exists, the UE shall read that system information block.

10.1.6.4.2 Master Information Block

Area scope: Cell

UE mode: Idle mode and connected mode

Information Element	Presence	Range	IE type and reference	Semantics description
Other information elements				
Value tag	M			
References to other system information blocks		1 .. <maxSysInfoBlockcount>		
Scheduling information	M			
CN information elements				
CN Type	M		Enumerated (GSM-MAP, ANSI-41, GSM-MAP AND ANSI-41)	
PLMN Identity	~~M~~C-GSM			
ANSI-41 Information elements	C-ANSI			
P_REV	M			
MIN_P_REV	M			
SID	M			
NID	M			

Condition	Explanation
Blocktype	The presence of this IE depends on the value of the preceding SIB type. This IE is mandatory if the specification of the SIB of that SIB type includes as first IE a Value tag IE.
GSM	This information element shall be present in case (CN Type == "GSM-MAP") or (CN Type == "GSM-MAP AND ANSI-41")
ANSI	This information element shall be present in case (CN Type == "ANSI-41") or (CN Type == "GSM-MAP AND ANSI-41")

Range Bound	Explanation
MaxSysInfoBlockcount	Maximum number of references to other system information blocks.

10.2.9 ANSI-41 Information elements

10.2.9.6 P_REV

This Information Element contains contains protocol revision level

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
P_REV	M			Protocol revision level

10.2.9.7 MIN_P_REV

This Information Element contains contains minimum protocol revision level.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
MIN_P_REV	M			Minimum protocol revision level

10.2.9.8 SID

This Information Element contains contains System identification

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
SID	M			System identification

10.2.9.9 NID

This Information Element contains contains Network identification.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
NID	M			Network identification

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99j20)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	051r1	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: TSG-RAN WG2 **Date:** 10 Dec. 99

Subject: UTRAN response time to uplink feedback commands of TX diversity control

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:
This CR contains change needed to inform the UE about UTRAN response mode in closed loop feedback TX diversity. The request from WG1 to have a new information element on the BCH is in R2-99d98 (Liaison to TSG-R WG2 informing about the changes made to FDD/TDD TX diversity solutions in TSG-R WG1 #8)
In the presently adopted closed loop diversity control mechanism, the UE is sending feedback information to UTRAN for adjustment of phase and/or transmission power level between the antennas. Currently there are no minimum requirements for the UTRAN to execute the requested adjustments and depending on implementation, there may be differences in the timing of UTRAN response. These differences consist of propagation delay and some UTRAN internal signalling delay for the related dedicated channels.
The new Information Element in SIB2 enables the UTRAN to signal it's feedback delay while processing a closed loop TX diversity using feedback information from UE to UTRAN. This IE applies only to FDD mode.

Clauses affected: 10.1.6.4.4

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specification		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.1.6.4.4 System Information Block type 2

The system information block type 2 contains the URA identity and information for periodic cell and URA update. It also includes the UE timers and counters to be used in connected mode.

Area scope: PLMN

UE mode: connected mode

Information Element	Presence	Range	IE type and reference	Semantics description
Other information elements				
Value tag	M			
UTRAN mobility information elements				
URA identity		1 ..<maxURAcount>		
Information for periodic cell and URA update	M			
UE information				
UE Timers and counters	M			*Note: Only timers and counters used in connected mode*
CHOICE *mode*				
> FDD				
>> TX Diversity Timing Mode	O		Enumerated(Normal Cell Mode,Macro Cell Mode)	*Note: The presence of this IE is mandatory if closed loop TX Diversity is used.*

Range Bound	Explanation
MaxURAcount	Maximum number of URA's in a cell

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

Document (R2-99j83)
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	055r1	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-RAN #6 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: TSG-RAN WG2 **Date:** Dec 2 1999

Subject: Information elements for cell selection and reselection

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

This contribution proposes information elements needed for idle mode cell selection and reselection. Value ranges for some of the information elements are proposed.

Most information elements in the current IE “Cell Selection and re-selection info” are not used in 25.304 and are therefore removed. Instead the parameters used in 25.304 are inserted in the cell information elements for measurement control.

Information elements are defined to support Ec/N0 and SIR as the measurement quantity (Q) in idle and connected mode.

Two Alternatives for sending the cell selection and reselection parameters are used, both in the serving cell and in the neighbouring cells, in accordance with TS 25.304.

Clauses affected: 10.2.2.2, 10.2.7.8-10

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments: This is a merge of the CRs in documents R2-99i21, R2-99j63 and R2-99h66

10.2.2.2 Cell selection and re-selection info

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~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				
Cell_selection_and_reselection_quality_measure	M		Enumerated (Ec/N0, SIR)	Choice of measurement (CPICH Rx Ec/N0 or CPICH Rx SIR) to use as quality measure Q. Note 1.
$Qhyst_s$	M		Enumerated (0, 0.5, ..7.5)	[dB]
$Treselection_s$	M		Integer (0-31)	[s]
$Qsearch_s$	M		Integer (-20..0)	Ec/N0, [dB]
Cell Selection and Reselection parameters	O			Used in Alternative 2 in TS 25.304
Decoding range	O			Decoding is done only when the cell measurement exceeds the neighbour cell decoding range.
$Qoffset_s$	O			Offset for UEs decoding this cell for cell reselection measurement
OffsetExp	C – if Qoffset			Expiration timer for UEs decoding the $Qoffset_s$

(Note 1: The work in order to support the CPICH Rx SIR measurement is in progress in RAN WG4 and may impact the use of that measurement in this document)

10.2.7.8 Intra-frequency cell info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Primary CCPCH info	M			
Primary CCPCH DL TX power	O			
UL load	O			FFS
SFN Measurement Indicator	M			
DL CCTrCH info	O			List of TFCS ID's to measure
DL Timeslot info	O			List of timeslots to measure
Cell Selection and Reselection parameters	O			
> Qmin	O		Integer (-20..0)	Ec/N0 or SIR, [dB]. Note 1. Default = same as in serving cell
> Maximum allowed UL TX power	O			[dBm] UE_TXPWR_MAX_RACH in 25.304. Default = same as in serving cell
> $Qoffset_{s,n}$ [dB]	O		Integer(-20, -19.5..20)	[dB] Default = 0 dB. Used in Alternative 1 in TS 25.304

(Note 1: The work in order to support the CPICH Rx SIR measurement is in progress in RAN WG4 and may impact the use of that measurement in this document)

10.2.7.9 Inter-frequency cell info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
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
Cell Selection and Reselection Info	O			
> Qmin	O		Integer (-20..0)	Ec/N0, [dB] Default = same as in serving cell
> Maximum allowed UL TX power	O			[dBm] UE_TXPWR_MAX_RACH in 25.304. Default = same as in serving cell
> $Qoffset_{s,n}$ [dB]	O		Integer(-20, -19.5..20)	[dB] Default = 0 dB. Used in Alternative 1 in TS 25.304

10.2.7.10 Inter-system cell info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
~~System type~~Radio access technology	M		Enumerated (GSM,..)	
~~System~~ Technology specific measurement info			Enumerated (frequency, timeslot, colour code, output power.)	
GSM information	C *isGSM*			
> $Qaccept_{s,n}$	M		Integer (0..63)	Unit according to RXLEV, GSM TS 05.08
> Base transceiver Station Identity Code (BSIC)	M			GSM TS 03.03
> > Network Color Code (NCC)	M		Integer (0..7)	
> > Base Station Color Code (BCC)	M		Integer (0..7)	
> BCCH ARFCN	M		Integer (0..1023)	GSM TS 04.18

Condition	**Explanation**
isGSM	The value of the IE "Radio access technology" is GSM.

3GPP TSG-RAN Meeting #6
Nice, France, 13-15 December 1999

***Document* (R2-99j84)**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	057r1	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 29/11/99

Subject: Introduction of a SCCH procedure

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Supporting procedure for SCCH information broadcast is included.

Clauses affected: Addition of clause 8.1.x, 10.1.x

Other specs affected:

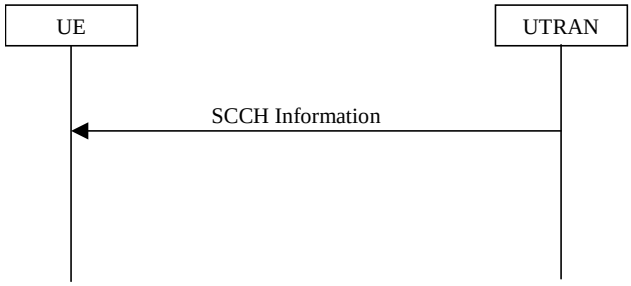
Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.1.x Broadcast of SCCH information



8.1.x.1 General

The purpose of this procedure is to broadcast SCCH information e.g. PCCPCH allocation information.

8.1.x.2 Initiation

The SCCH broadcast information is continuously repeated on a regular basis in accordance with the transmission of PSCH.

8.1.x.3 Reception SCCH Information message by the UE

The UE shall evaluate the received SCCH Information and shall operate accordingly.

If the UE failed to decode the SCCH Information no further action shall be performed.

10.1.x SCCH Information

10.1.x.1 SCCH INFORMATION

RLC-SAP: TM

Logical channel: SCCH

Direction: UTRAN -> UE

Information Element	Presence	Range	IE type and reference	Semantics description
SCCH info	M		Bit String(3)	Reserved

Condition	Explanation

3GPP TSG-RAN Meeting #6

Nice, France, 13-15 December 1999

Document (R2-99i02)

e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	**CR**	**061**	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#6	for approval	**X**	strategic		*(for SMG*
list expected approval meeting # here ↑		for information		non-strategic		*use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [**X**] UTRAN / Radio [**X**] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 29 Nov 1999

Subject: Support for DS-41 UE Paging Identity

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	**X**		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	**X**
				Release 00	

Reason for change:

- This CR contains modifications to the Paging type 2 message and paging record information element in order to provide support for DS-41 UE paging identity.

Clauses affected: 10.1.3.2, 10.2.3.7

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.1.3.2 PAGING TYPE 2

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

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
CN Information elements				
CN domain identity	M			
Paging Record Type Identifier	M		Enumerated (IMSI (GSM-MAP), TMSI (GSM-MAP) / P-TMSI) (IMSI (DS-41), TMSI(DS-41))	
UE Information elements				
Paging cause	M			

10.2.3.7 Paging record

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Paging originator	M		Enumerated (UTRAN,CN)	
Paging cause	C isCN			
CN domain identity	C isCN			
CHOICE CN Identity	C idleMode			
IMSI (GSM-MAP)			TS 24.008	
TMSI (GSM-MAP)			TS 24.008	
P-TMSI			TS 24.008	
IMSI (DS-41)			TIA/EIA/IS-2000-4	
TMSI (DS-41)			TIA/EIA/IS-2000-4	
U-RNTI	C connected Mode			

Condition	Explanation
IsCN	This information element is included where the page is originated from the CN.
IdleMode	This IE is included for UE not having RRC Connection.
ConnectedMode	This IE is included for UE having RRC Connection.
CHOICE CN *Identity*	**Condition under which the given *Identity* is chosen**
IMSI(GSM-MAP)	For idle mode pages
TMSI(GSM-MAP)	For idle mode pages
P-TMSI	For idle mode pages
IMSI(DS-41)	For idle mode pages
TMSI(DS-41)	For idle mode pages

3GPP TSG-RAN Meeting #6

Nice, France, 13-15 December 1999

Document (R2-99k49)

e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	062r2	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-RAN#6 *list expected approval meeting # here ↑*

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 29 Nov 1999

Subject: Support for cdma2000 Hard Handover

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[X]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change:

- This CR contains modifications to the RRC messages in order to provide support hard handover to cdma2000 as required by the OHG agreement.

Clauses affected: 10.1.2.3, 10.2.7.10, 10.2.7.15, 10.2.8.2

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.1.2.3 MEASUREMENT REPORT

<Functional description of this message to be included here>

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UE→UTRAN

Information Element	Presence	Range	IE type and reference	Semantics description
Message Type	M			
Measurement Information Elements				
Measurement report information		1 to <maxMeas RepCount>		Send Measurement Report information for each measurement report in the message (Note 1)
Measurement identity number	M			
Measured Results	C MR required			
CHOICE event result	C event trigger			Note 1,2
Intra-frequency measurement event results				
Inter-frequency measurement event results				
Inter-system measurement event results				For IS-2000 results, include fields of the *Pilot Strength Measurement Message* from Section 2.7.2.3.2.5 of TIA/EIA/IS-2000.5
Traffic volume measurement event results				
Quality measurement event results				

Condition	Explanation
event trigger	This element is only included in the message which is sent in event trigger reporting mode.
MR required	This information element is included by the sender only if indicated optionally by Reporting Quantity in Measurement Control

Range Bound	Explanation
MaxMeasRepCount	Maximum number of Measurement reports in a message

CHOICE *event result*	Condition under which the given *event result* is chosen
intra-frequency measurement event results	
inter-frequency measurement event results	

inter-system measurement event results	
traffic volume measurement event results	
Quality measurement event results	

10.2.7.10 Inter-system cell info

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
System type	M		enumerated (GSM, IS-2000..)	
System specific measurement info			enumerated (frequency, timeslot, colour code, output power, PN offset.)	For IS-2000, use fields from TIA/EIA/IS-2000.5, Section 3. 7.3.3.2.27, *Candidate Frequency Neighbor List Message*

10.2.7.15 Inter-system measurement quantity.

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

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Ec/Io	O FFS			One of these is mandatory
Signal strength	O			
Pathloss	O FFS			
Colour code	C - GSM			
CHOICE *system*				
IS2000				
TADD E_c/I_0	MC - IS2000		Integer(0..63)	Admission criteria for neighbors, see section 2.6.6.2.6 of TIA/EIA/IS-2000.5
TCOMP E_c/I_0	MC – IS2000		Integer(0..15)	Admission criteria for neighbors, see section 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
SOFT SLOPE	OC – IS2000opt		Integer(0..63)	Admission criteria for neighbors, see section 2.6.6.2.3 and 2.6.6.2.5.2 of TIA/EIA/IS-2000.5
ADD_INTERCEPT	OC – IS2000opt		Integer(0..63)	Admission criteria for neighbors, see section 2.6.6.2.5.2 of TIA/EIA/IS-2000.5

Condition	Explanation
IS2000	This information element is sent only when the system being measured is an IS-2000 system
IS2000opt	This information element is sent only when the

	~~system being measured is an IS-2000 system and is optional.~~
GSM	This information element is only sent when the system being measured is a GSM system
~~GSMopt~~	~~This information element is sent only when the system being measured is a GSM system and is optional~~

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.

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
System type	M		Enumerated (GSM,1..15)	
Message(s)	M	1..<maxInterSysMessages>	Bitstring (1..512)	Formatted and coded according to specification for the indicated system type. See Note 1

Range Bound	Explanation
MaxInterSysMessages(=4)	Maximum number of Inter System Messages to send

Note 1: For inter-system handovers to IS 2000 system, this field shall consist of the Universal Handoff Direction message, described in Section 3.7.3.3.2.36 of TIA/EIA IS-2000.5

3GPP TSG-RAN Meeting #6

Nice, France, 13-15 December 1999

Document (R2-99k42)

e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	**CR**	**063r1**	Current Version:	Intermediate

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-RAN#6 *list expected approval meeting # here ↑*

for approval **X** for information

strategic non-strategic *(for SMG use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 29 Nov 1999

Subject: Provide necessary signalling to support FDD DSCH

Work item:

Category: *(only one category Shall be marked With an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

- Current specification does not describe how to map TFCI(field 2) to PDSCH channelisation code and CTFC. Further information can be found in tdoc r2-99i05.

Clauses affected: 10.2.5.1, 10.2.6

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.2.6.X PDSCH code mapping (FDD only)

This IE indicates the association between each possible value of TFCI(field 2) and the corresponding PDSCH channelisation code. There are three ways which the UTRAN must choose between in order to signal the mapping information, these are described below. The signalling capacity consumed by the different methods will vary depending on the way in which the UTRAN configures usage of the DSCH. In each case the location of the PDSCH code tree root is signalled. A given PDSCH channelisation code within the PDSCH code tree is then identified by spreading factor, SF_{α} and code number $(0..(SF_{\alpha}/SF_{root})-1)$, where SF_{root} is the SF of the root of the PDSCH code sub-tree.

Method #1 - Using code range

The mapping is described in terms of a number of groups, each group associated with a given spreading factor. The UE maps TFCI(field2) values to PDSCH codes in the following way. The PDSCH code used for TFCI(field 2) = 1 , is given by the SF and code number = 'PDSCH code start' of Group = 1. The PDSCH code used for TFCI(field 2) = 2 , is given by the SF and code number = 'PDSCH code start' + 1. This continues, with unit increments in the value of TFC mapping to unit increments in code number up until the point that code number = 'PDSCH code stop'. The process continues in the same way for the next group with the TFCI(field 2) value used by the UE when constructing its mapping table starting at the largest value reached in the previous group plus one. In the event that 'PDSCH code start' = 'PDSCH code stop' (as may occur when mapping the PDSCH root code to a TFCI (field 2) value) then this is to be interpreted as defining the mapping between the channelisation code and a single TFCI (ie. TFCI(field 2) should not be incremented twice).

Method #2 - Using TFCI range

The mapping is described in terms of a number of groups, each group corresponding to a given PDSCH channelisation code. The PDSCH code specified in the first group applies for all values of TFCI(field 2) between 1 and the specified 'Max TFCI(field2)'. The PDSCH code specified in the second group applies for all values of TFCI(field 2) between the 'Max TFCI(field2) value' specified in the last group plus one and the specified 'Max TFCI(field2)' in the second group. The process continues in the same way for the following groups with the TFCI(field 2) value starting at the largest value reached in the previous group plus one.

Method #3 - Explicit

The mapping between TFCI(field 2) value and PDSCH channelisation code is spelt out explicitly for each value of TFCI (field2)

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
Root of PDSCH sub tree				
Spreading factor	M		Enumerated(4, 8, 16, 32, 64, 128, 256, 512)	
Code number	M		Integer(0..maxCodeNumComp-1)	
Choice *signalling method*				
code range				
PDSCH code mapping		1 to <MaxNoCodeGroups>		
Spreading factor	M		Enumerated(4, 8, 16, 32, 64, 128, 256, 512)	
PDSCH code start				
Code number	M		Integer(0..maxCodeNumDSCH-1)	
PDSCH code stop				
Code number	M		Integer(0..maxCodeNumDSCH-1)	
TFCI range				
DSCH mapping		1 to <MaxNoTFCIGroups>		
Max TFCI(field2) value	M		Integer(1..512)	This is the maximum value in the range of TFCI(field 2) values for which the specified PDSCH code applies
PDSCH code				
Spreading factor	M		Enumerated(4, 8, 16, 32, 64, 128, 256, 512)	
Code number	M		Integer(0..maxCodeNumDSCH-1)	
Explicit				
PDSCH code		1 to MaxTFCI_2_Combs		The first instance of the parameter *PDSCH code* corresponds to TFCI (field2) = 1, the second to TFCI(field 2) = 2and so on.
Spreading factor	M		Enumerated(4, 8, 16, 32, 64, 128, 256, 512)	
Code number	M		Integer(0..maxCodeNumDSCH-1)	

Range Bound	Explanation
MaxCodeNumComp	Maximum number of codes at the defined spreading factor, within the complete code tree.
MaxCodeNumDSCH	Maximum number of codes at the defined spreading factor within the part of the code tree occupied by the PDSCH sub-tree.

MaxTFCI_2_Combs	Maximum number of TFCI (field 2) combinations (given by 2 raised to the power of the length of the TFCI field 2)
MaxNoTFCIGroups	Maximum number of groups, each group described in terms of a range of TFCI(field 2) values for which a single PDSCH code applies.
MaxNoCodeGroups	Maximum number of groups, each group described in terms of a range of PDSCH channelisation code values for which a single spreading factor applies.

Proposed enhancement to the 'Transport format combination set' IE

10.2.5.1 Transport Format Combination Set

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

For FDD, Where the UE is assigned access to one or more DSCH transport channels then the UTRAN has the choice of two methods for signalling the mapping between TFCI(field 2) values and the corresponding TFC:

Method #1 - TFCI range

The mapping is described in terms of a number of groups, each group corresponding to a given transport format combination (value of CTFC_DSCH). The CTFC_DSCH value specified in the first group applies for all values of TFCI(field 2) between 1 and the specified 'Max TFCI(field2) value'. The CTFC_DSCH value specified in the second group applies for all values of TFCI(field 2) between the 'Max TFCI(field2) value' specified in the last group plus one and the specified 'Max TFCI(field2) value' in the second group. The process continues in the same way for the following groups with the TFCI(field 2) value used by the UE in constructing its mapping table starting at the largest value reached in the previous group plus one.

Method #2 - Explicit

The mapping between TFCI(field 2) value and CTFC_DSCH is spelt out explicitly for each value of TFCI (field2)

Information Element/Group name	Presence	Range	IE type and reference	Semantics description
CHOICE *DSCH*				
FDD without ~~No~~ access to DSCH assigned or TDD				This choice is made if the UE is not assigned any DSCH transport channels
Transport format combination		1 to 1024		The first instance of the parameter *Transport format combination* correspond to Transport format combination ~~0~~1, the second to transport format combination ~~1~~2 and so on.
CTFC			Integer(0..MaxCTFC-1)	Integer number calculated according to clause 14.
FDD with a~~A~~ccess to DSCH assigned				This choice is made if the UE is assigned one or more DSCH transport channels
Length of TFCI2	M		Integer (1..9)	This IE indicates the length measured in number of bits of TFCI(field2)
Transport format combination_DCH		1 to <MaxTFCI_1_Combs>		The first instance of the parameter *Transport format combination_DCH* corresponds to TFCI (field 1) = 1, the second to TFCI (field 1) = 2 and so on.
CTFC_DCH	M		Integer(0..MaxCTFC_DCH-1)	Integer number calculated according to clause 14. The calculation of CTFC ignores any DSCH transport channels which may be assigned
Choice *Signalling method*				
TFCI range				
TFC mapping on DSCH		1 to <MaxNoTFCIGroups>		
Max TFCI(field2) value	M		Integer(1..512)	This is the Maximum value in the range of TFCI(field2) values for which the specified CTFC_DSCH applies
CTFC_DSCH	M		Integer(0..MaxCTFC_DSCH-1)	Integer number calculated according to clause 14. The calculation of CTFC ignores any DCH transport channels which may be assigned
Explicit				
Transport format combination_DSCH		1 to <MaxTFCI_2_Combs>		The first instance of the parameter *Transport format combination_DSCH* corresponds to TFCI (field2) = 1, the second to TFCI (field 2) = 2 and so on.
CTFC_DSCH	M		Integer(0..MaxCTFC_DSCH-1)	Integer number calculated according to clause 14. The calculation of CTFC ignores any DCH transport channels which may be assigned

Range Bound	Explanation
MaxTFCI_1_Combs	Maximum number of TFCI (field 1) combinations (given by 2 raised to the power of the length of the TFCI (field 1))

MaxTFCI_2_Combs	Maximum number of TFCI (field 2) combinations (given by 2 raised to the power of the length of the TFCI (field 2))
MaxNoTFCIGroups	Maximum number of groups, each group described in terms of a range of TFCI(field 2) values for which a single value of CTFC_DSCH applies
MaxCTFC	Maximum value~~number~~ of ~~the~~ CTFC ~~value~~ is calc~~l~~ulated according to the following: $\sum_{i=1}^{I}(L_i - 1)P_i$ with the notation according to clause 14.
MaxCTFC_DCH	Maximum value of CTFC DCH is calculated according to the following: $\sum_{i=1}^{I}(L_i - 1)P_i$ with the notation according to clause 14 where only the DCH transport channels are taken into account in the calculation.
MaxCTFC_DSCH	Maximum value of CTFC DSCH is calculated according to the following: $\sum_{i=1}^{I}(L_i - 1)P_i$ with the notation according to clause 14 where only the DSCH transport channels are taken into account in the calculation..