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Agenda Item:	**8.10 Closed Release-6 Work Items**
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Title:	**TR25.887 v2.0.0 Beamforming Enhancement**
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The attached TR25.887 v.2.0.0 on Beamforming Enhancement is provided for final TSG-RAN approval.

3G TR 25.887 V2.0.0 (2004-02)

Technical Report

3rd Generation Partnership Project;
Technical Specification Group Radio Access Network;
Beamforming Enhancements
(Release 6)

Beamforming Enhancements

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Contents

Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

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Introduction

At RAN#13 plenary meeting, a work item on Beamforming was approved. Beamforming with dedicated pilot symbols or with S-CPICH has potential to improve system capacity. Also UTRAN RRM could be improved by defining support for measurements that take into account the possible use of beamforming with S-CPICH or with dedicated pilots only.

1 Scope

The scope of this TR is to define potential measurements for UTRA FDD and their performance requirements for efficient support of RRM in case beamforming is used in UTRAN.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

For a specific reference, subsequent revisions do not apply.

For a non-specific reference, the latest version applies.

[1] TS25.133 : Requirements for support of radio resource management (FDD)

[2] TS 25.211 : Physical channels and mapping of transport channels onto physical channels (FDD)

[3] TS 25.213 : Spreading and modulation (FDD)

[4] TS 25.214 : FDD : Physical layer procedures

[5] TS 25.302 : Services provided by the Physical Layer

[6] TS 25.331 : Radio Resource Control (RRC) Protocol Specification

[7] TS 25.423 : UTRAN Iur Interface RNSAP Signalling

[8] TS 25.433 : UTRAN Iub Interface NBAP Signalling

[9] TS 25.435 : UTRAN interface User Plane Protocol for Common Transport channel Data Streams

3. Definitions, symbols and abbreviations

3.1 Definitions

Beamforming antennas: an array of antennas used to form one or several portions within a cell with controlled antenna radiation patterns.

Cell portion: A part of a cell that is covered by a specific beam antenna radiation pattern, which is can be created, e.g. by applying a specific weight vector on the beamforming antenna or using a grid of fixed beam directions.

Flexible beamforming: beamforming antennas where the uplink and downlink beams are formed by the application of weight vectors to the received and transmitted signals to control the relative phase between the signals applied at the antenna elements. The weight vectors, and hence beam directions, are flexible.

Beamforming with grid of fixed beams: beamforming antennas where the uplink and downlink beams are formed in such a way that the beam directions are fixed.

3.2 Symbols

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BER	Bit Error Rate
BLER	Block Error Rate
Ec/No	Received energy per chip divided by the power density in the band
ISCP	Interference Signal Code Power
RL	Radio Link
RSCP	Received Signal Code Power
RSSI	Received Signal Strength Indicator
SIR	Signal to Interference Ratio

4. Applicability of performance requirements and measurements.

The performance requirements and measurements outlined in this TR require the presence of beamforming antennas, as defined above, and therefore shall only apply where such beamforming antennas are present. This is because the application of the performance requirements and measurements to Node B's which do not otherwise support beamforming antennas would add cost and complexity to these Node Bs.

5. Performance requirements for beamforming related measurements

RAN WG4 agreed that Release'5 performance requirements are covering all the situations in order to be in compliance with the definition of the RRM measurements for beamforming enhancements. Thus, no new performance requirements are needed for efficient support of RRM.

6. Measurements for RRM support of beamforming

The following UTRAN measurements are proposed to be extended/added to provide support for RRM in case beamforming is used:

- Received total wide band power: The measurement is reported per cell portion.
- Transmitted carrier power: The measurement is reported per cell portion.

7. Overview of the changes required in the specification

7.1 RAN WG1

TS25.215 sections on received total wide band power, SIR, transmitted carrier power and transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission are updated to include description on beamforming antennas.

5.2.1 Received total wide band power

Definition	The received wide band power, including noise generated in the receiver, within the bandwidth defined by the pulse shaping filter. In case of receiver diversity the reported value shall be linear average of the power in the diversity branches. The reference point for the Received total wide band power measurement shall be the output of the pulse shaping filter in the receiver. When cell portions are defined in the cell, the total received wideband power shall be measured for each cell portion.

5.2.2 SIR

Definition	Type 1: Signal to Interference Ratio, is defined as: (RSCP/ISCP)×SF. Measurement shall be performed on the DPCCH of a Radio Link Set. In compressed mode the SIR shall not be measured in the transmission gap. The reference point for the SIR measurements shall be the Rx antenna connector. If the radio link set contains more than one radio link, the reported value shall be the linear summation of the SIR from each radio link of the radio link set. If Rx diversity is used in the Node B for a cell, the SIR for a radio link shall be the linear summation of the SIR from each Rx antenna for that radio link. where: RSCP = Received Signal Code Power, unbiased measurement of the received power on one code. ISCP = Interference Signal Code Power, the interference on the received signal. SF=The spreading factor used on the DPCCH. Type 2: Signal to Interference Ratio, is defined as: (RSCP/ISCP)×SF. The measurement shall be performed on the PRACH control part. The reference point for the SIR measurements shall be the Rx antenna connector. When cell portions are defined in the cell, the SIR measurement shall be possible in each cell portion. where: RSCP = Received Signal Code Power, unbiased measurement of the received power on the code. ISCP = Interference Signal Code Power, the interference on the received signal. SF=The spreading factor used on the control part of the PRACH.

5.2.4 Transmitted carrier power

Definition	Transmitted carrier power, is the ratio between the total transmitted power and the maximum transmission power. Total transmission power is the mean power [W] on one carrier from one UTRAN access point. Maximum transmission power is the mean power [W] on one carrier from one UTRAN access point when transmitting at the configured maximum power for the cell. Measurement shall be possible on any carrier transmitted from the UTRAN access point. The reference point for the transmitted carrier power measurement shall be the Tx antenna connector. In case of Tx diversity the transmitted carrier power for each branch shall be measured and the maximum of the two values shall be reported to higher layers, i.e. only one value will be reported to higher layers. When cell portions are defined in the cell, the transmitted carrier power for each cell portion shall be measured and reported to higher layers.

5.2.15 Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission

Definition	Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission is the ratio between the total transmitted power of all codes not used for HS-PDSCH or HS-SCCH transmission on one DL carrier from one UTRAN access point, and the maximum transmission power possible to use on that DL carrier at this moment of time. Total transmission power of all codes not used for HS-PDSCH or HS-SCCH transmission is the mean power [W] of all codes not used for HS-PDSCH or HS-SCCH transmission on one carrier from one UTRAN access point. Maximum transmission power is the mean power [W] on one carrier from one UTRAN access point when transmitting at the configured maximum power for the cell. The measurement shall be possible on any carrier transmitted from the UTRAN access point. The reference point for the transmitted carrier power measurement of all codes not used for HS-PDSCH or HS-SCCH transmission shall be the Tx antenna connector. In case of Tx diversity the transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission for each branch shall be measured and the maximum of the two values shall be reported to higher layers, i.e. only one value will be reported to higher layers. When cell portions are defined in the cell, the transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission for each cell portion shall be measured and reported to higher layers.

7.2 RAN WG3

The measurements specified to support beamforming require some signalling support over the Iub in order to be useful. The Node-B beamforming capability is required to be known by the RNC. The possible modes are ("none", "flexible beam", "grid of fixed beams"). A capability of "none" means that beamforming antennas, as defined above, are not provided. This does not exclude the application of other non-standardised (uplink) schemes using antenna arrays which do not require support in the specifications. The following messages are suggested:

- Beamforming mode to apply: "none", "flexible beam", or "grid of fixed beams".

- The average wideband power measurements (uplink and downlink) should be reported from the Node-B to the RNC over the Iub interface. Thus, a measurement message should be sent for each cell portion (1,2,…,*N*) in addition to the sector wideband measurement. The reporting of these measurements could be on request or periodic, as specified for the sector wideband measurements. If the beamforming mode is "none", then only sector wideband measurements are reported.

- If the beamforming mode is "flexible beam" or "grid of fixed beams", information should be added to the "Node-B configuration message", so that the RNC obtain information on the number of beams (*N*), in which the Node-B conducts wideband power measurements for RRM purposes.

- The beamforming specific Node-B measurements are intended for RRM purposes such as admission control (AC), packet scheduling (PS), etc. During a random access procedure, if beamforming is used in a Node-B, the RNC should therefore also know in which cell portion the new UE is located. This information is required in order to be able to make a decision on whether the UE can get a call accepted. The cell portion of the new UE is equivalent to the portion of the uplink where the highest SIR is received from that particular UE. This can be accomplished by introducing a new procedure during random access, e.g. before deciding on admission, the RNC asks the Node-B to perform a best cell portion measurement. Alternatively, this could be accomplished by adding the cell portion index to each random access message sent from the Node-B to the RNC.

- Similar action has to be taken during soft handover (SHO) where the RNC needs the information of which cell portion the UE belongs to. This information is needed in the AC in order to decide for available resources before the new radio link is created. This can be accomplished by e.g., asking the Node-B to perform a best cell portion measurement before deciding if the new link should be created.

- In addition to the special behaviour related to random access and SHO, there is also an issue for the RNC to signal to the Node-B in which cell portion to transmit a certain link to a certain UE. This requires an addition to the signaling scheme that is used in the present version of the specification.

- For scenarios where the Node-B uses beamforming mode "grid –of fixed beams" or "flexible beam" with one SCPICH assigned per beam, there are additional considerations. For this particular case, a UE transition from one beam to another require higher layer signalling, since the UE needs to get informed that it should use another SCPICH. To be able to handle this the following signalling between Node-B and RNC is needed for the case where beamforming is applied with a SCPICH per beam:

- For each UE, the Node-B should measure the uplink received power of the of the pilot symbols in all the beams where a SCPICH is assigned. These measurements should be locally averaged in the Node-B before they are reported to the RNC. The length of the power averaging window is selected by the RNC. In order to reduce the Iub signalling load, we could chose to only report the strongest measurements to the RNC.

- Based on these measurements, the RNC determines whether a beam handover is needed or not. Hence, the beam handover algorithm can be implemented in coherence with the conventional sector handover algorithms.

The changes required in TS25.423

8.2.1 Uplink Signalling transfer

Add statement for FDD that:

[FDD- The DRNC shall include the *Cell Portion ID* IE in the UPLINK SIGNALLING TRANSFER INDICATION message if available.]

8.3.1 Radio Link Setup

Add statement on physical channels handling that:

[FDD – If Secondary CPICH may be used as a Phase Reference for this Radio Link, the DRNC shall include the *Secondary CPICH Information* IE in the RADIO LINK SETUP RESPONSE message.]

Add statement on radio link handling that:

[FDD - If the RADIO LINK SETUP REQUEST message includes the *Celll Portion ID* IE, the DRNS shall use this information when it decides to use beamforming for the new RL.]

9.1.3 RADIO LINK SETUP REQUEST

9.1.3.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
SRNC-ID	M		RNC-ID 9.2.1.50		YES	reject
S-RNTI	M		9.2.1.53		YES	reject
D-RNTI	O		9.2.1.24		YES	reject
Allowed Queuing Time	O		9.2.1.2		YES	reject
UL DPCH Information		*1*			YES	reject
>UL Scrambling Code	M		9.2.2.53		–	
>Min UL Channelisation Code Length	M		9.2.2.25		–	
>Max Number of UL DPDCHs	C – CodeLen		9.2.2.24		–	
>Puncture Limit	M		9.2.1.46	For the UL.	–	
>TFCS	M		TFCS for the UL 9.2.1.63		–	
>UL DPCCH Slot Format	M		9.2.2.52		–	
>Uplink SIR Target	O		Uplink SIR 9.2.1.69		–	
>Diversity mode	M		9.2.2.8		–	
>SSDT Cell Identity Length	O		9.2.2.41		–	
>S Field Length	O		9.2.2.36		–	
>DPC Mode	O		9.2.2.12A		YES	reject
DL DPCH Information		*1*			YES	reject
>TFCS	M		TFCS for the DL. 9.2.1.63		–	
>DL DPCH Slot Format	M		9.2.2.9		–	
>Number of DL Channelisation Codes	M		9.2.2.26A		–	
>TFCI Signalling Mode	M		9.2.2.46		–	
>TFCI Presence	C-SlotFormat		9.2.1.55		–	
>Multiplexing Position	M		9.2.2.26		–	
>Power Offset Information		*1*			–	
>>PO1	M		Power Offset 9.2.2.30	Power offset for the TFCI bits.	–	
>>PO2	M		Power Offset 9.2.2.30	Power offset for the TPC bits.	–	
>>PO3	M		Power Offset 9.2.2.30	Power offset for the pilot bits.	–	
>FDD TPC Downlink Step Size	M		9.2.2.16		–	
>Limited Power Increase	M		9.2.2.21A		–	
>Inner Loop DL PC Status	M		9.2.2.21a		–	
>Split Type	O		9.2.2.39a		YES	reject
>Length of TFCI2	O		9.2.2.21C		YES	reject
DCH Information	M		DCH FDD Information 9.2.2.4A		YES	reject
DSCH Information	O		DSCH FDD Information 9.2.2.13A		YES	reject
RL Information		*1…<maxnoofRLs>*			EACH	notify
>RL ID	M		9.2.1.49		–	
>C-ID	M		9.2.1.6		–	
>First RLS Indicator	M		9.2.2.16A		–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
>Frame Offset	M		9.2.1.30		–	
>Chip Offset	M		9.2.2.1		–	
>Propagation Delay	O		9.2.2.33		–	
>Diversity Control Field	C – NotFirstRL		9.2.1.20		–	
>Initial DL TX Power	O		DL Power 9.2.1.21A		–	
>Primary CPICH Ec/No	O		9.2.2.32		–	
>SSDT Cell Identity	O		9.2.2.40		–	
>Transmit Diversity Indicator	C – Diversity mode		9.2.2.48		–	
>SSDT Cell Identity for EDSCHPC	C-EDSCHPC		9.2.2.40A		YES	ignore
>Enhanced Primary CPICH Ec/No	O		9.2.2.13I		YES	ignore
>RL Specific DCH Information	O		9.2.1.49A		YES	ignore
>Delayed Activation	O		9.2.1.19Aa		YES	reject
>Qth Parameter	O		9.2.2.34a		YES	ignore
>Cell Portion ID	O		9.2.2.xx		YES	ignore
Transmission Gap Pattern Sequence Information	O		9.2.2.47A		YES	reject
Active Pattern Sequence Information	O		9.2.2.A		YES	reject
Permanent NAS UE Identity	O		9.2.1.73		YES	ignore
DL Power Balancing Information	O		9.2.2.10A		YES	ignore
HS-DSCH Information	O		HS-DSCH FDD Information 9.2.2.19a		YES	reject
HS-PDSCH RL ID	C – InfoHSDSCH		RL ID 9.2.1.49		YES	reject
UE Support Of Dedicated Pilots For Channel Estimation	O		9.2.2.50A		YES	ignore
UE Support Of Dedicated Pilots For Channel Estimation Of HS-DSCH	O		9.2.2.50B		YES	ignore

Condition	Explanation
CodeLen	The IE shall be present if *Min UL Channelisation Code length* IE equals to 4
SlotFormat	The IE shall be present if the *DL DPCH Slot Format* IE is equal to any of the values from 12 to 16.
NotFirstRL	The IE shall be present if the RL is not the first one in the *RL Information* IE.
Diversity mode	The IE shall be present if *Diversity Mode* IE in *UL DPCH Information* IE is not equal to "none".
EDSCHPC	This IE shall be present if *Enhanced DSCH PC* IE is present in the *DSCH Information* IE.
InfoHSDSCH	This IE shall be present if *HS-DSCH Information* IE is present.

Range bound	Explanation
MaxnoofRLs	Maximum number of RLs for one UE.

9.1.4 RADIO LINK SETUP RESPONSE

9.1.4.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
D-RNTI	O		9.2.1.24		YES	ignore
CN PS Domain Identifier	O		9.2.1.12		YES	ignore
CN CS Domain Identifier	O		9.2.1.11		YES	ignore
RL Information Response		*1..<maxnoofRLs>*			EACH	ignore
>RL ID	M		9.2.1.49		–	
>RL Set ID	M		9.2.2.35		–	
>URA Information	O		9.2.1.70B		–	
>SAI	M		9.2.1.52		–	
>Cell GAI	O		9.2.1.5A		–	
>UTRAN Access Point Position	O		9.2.1.70A		–	
>Received Total Wide Band Power	M		9.2.2.35A		–	
>Secondary CCPCH Info	O		9.2.2.37B		–	
>DL Code Information	M		FDD DL Code Information 9.2.2.14A		–	
>CHOICE *Diversity Indication*	M				–	
>>*Combining*					–	
>>>RL ID	M		9.2.1.49	Reference RL ID for the combining	–	
>>>DCH Information Response	O		9.2.1.16A		YES	ignore
>>*Non Combining or First RL*					–	
>>>DCH Information Response	M		9.2.1.16A		–	
>SSDT Support Indicator	M		9.2.2.43		–	
>Maximum Uplink SIR	M		Uplink SIR 9.2.1.69		–	
>Minimum Uplink SIR	M		Uplink SIR 9.2.1.69		–	
>Closed Loop Timing Adjustment Mode	O		9.2.2.3A		–	
>Maximum Allowed UL Tx Power	M		9.2.1.35		–	
>Maximum DL TX Power	M		DL Power 9.2.1.21A		–	
>Minimum DL TX Power	M		DL Power 9.2.1.21A		–	
>Primary Scrambling Code	O		9.2.1.45		–	
>UL UARFCN	O		UARFCN 9.2.1.66	Corresponds to Nu in ref. [6]	–	
>DL UARFCN	O		UARFCN 9.2.1.66	Corresponds to Nd in ref. [6]	–	
>Primary CPICH Power	M		9.2.1.44		–	
>DSCH Information Response	O		DSCH FDD Information Response 9.2.2.13B		YES	ignore
>Neighbouring UMTS Cell Information	O		9.2.1.41A		–	
>Neighbouring GSM Cell Information	O		9.2.1.41C		–	
>PC Preamble	M		9.2.2.27a		–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
>SRB Delay	M		9.2.2.39A		–	
>Cell GA Additional Shapes	O		9.2.1.5B		YES	ignore
>DL Power Balancing Activation Indicator	O		9.2.2.10B		YES	ignore
>HS-DSCH Information Response	O		HS-DSCH FDD Information Response 9.2.2.19b		YES	ignore
>TFCI PC Support Indicator	O		9.2.2.46A		YES	ignore
>HCS Prio	O		9.2.1.30N		YES	ignore
>Primary CPICH Usage For Channel Estimation	O		9.2.2.32A		YES	ignore
>Secondary CPICH Information	O		9.2.2.38A		YES	ignore
Uplink SIR Target	O		Uplink SIR 9.2.1.69		YES	ignore
Criticality Diagnostics	O		9.2.1.13		YES	ignore
DSCH-RNTI	O		9.2.1.26Ba		YES	ignore
HS-DSCH-RNTI	O		9.2.1.30P		YES	reject

Range bound	Explanation
MaxnoofRLs	Maximum number of RLs for one UE.

9.1.5 RADIO LINK SETUP FAILURE

9.1.5.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
D-RNTI	O		9.2.1.24		YES	ignore
CN PS Domain Identifier	O		9.2.1.12		YES	ignore
CN CS Domain Identifier	O		9.2.1.11		YES	ignore
CHOICE *Cause Level*	M				YES	ignore
>General					–	
>>Cause	M		9.2.1.5		–	
>RL Specific					–	
>>Unsuccessful RL Information Response		*1..<maxnoofRLs>*			EACH	ignore
>>>RL ID	M		9.2.1.49		–	
>>>Cause	M		9.2.1.5		–	
>>Successful RL Information Response		*0..<maxnoofRLs-1>*			EACH	ignore
>>>RL ID	M		9.2.1.49		–	
>>>RL Set ID	M		9.2.2.35		–	
>>>URA Information	O		9.2.1.70B		–	
>>>SAI	M		9.2.1.52		–	
>>>Cell GAI	O		9.2.1.5A		–	
>>>UTRAN Access Point Position	O		9.2.1.70A		–	
>>>Received Total Wide Band Power	M		9.2.2.35A		–	
>>>Secondary CCPCH Info	O		9.2.2.37B		–	
>>>DL Code Information	M		FDD DL Code Information 9.2.2.14A		–	
>>>CHOICE *Diversity Indication*	M				–	
>>>>Combining					–	
>>>>>RL ID	M		9.2.1.49	Reference RL ID for the combining	–	
>>>>>DCH Information Response	O		9.2.1.16A		YES	ignore
>>>>Non Combining or First RL					–	
>>>>>DCH Information Response	M		9.2.1.16A		–	
>>>SSDT Support Indicator	M		9.2.2.43		–	
>>>Maximum Uplink SIR	M		Uplink SIR 9.2.1.69		–	
>>>Minimum Uplink SIR	M		Uplink SIR 9.2.1.69		–	
>>>Closed Loop Timing Adjustment Mode	O		9.2.2.3A		–	
>>>Maximum Allowed UL Tx Power	M		9.2.1.35		–	
>>>Maximum DL TX Power	M		DL Power 9.2.1.21A		–	
>>>Minimum DL TX Power	M		DL Power 9.2.1.21A		–	
>>>Primary CPICH Power	M		9.2.1.44		–	
>>>Primary Scrambling Code	O		9.2.1.45		–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
>>>UL UARFCN	O		UARFCN 9.2.1.66	Corresponds to Nu in ref. [6]	–	
>>>DL UARFCN	O		UARFCN 9.2.1.66	Corresponds to Nd in ref. [6]	–	
>>>DSCH Information Response	O		DSCH FDD Information Response 9.2.2.13B		YES	ignore
>>>Neighbouring UMTS Cell Information	O		9.2.1.41A		–	
>>>Neighbouring GSM Cell Information	O		9.2.1.41C		–	
>>>PC Preamble	M		9.2.2.27a		–	
>>>SRB Delay	M		9.2.2.39A		–	
>>>Cell GA Additional Shapes	O		9.2.1.5B		YES	ignore
>>>DL Power Balancing Activation Indicator	O		9.2.2.10B		YES	ignore
>>>HS-DSCH Information Response	O		HS-DSCH FDD Information Response 9.2.2.19b		YES	ignore
>>>TFCI PC Support Indicator	O		9.2.2.46A		YES	ignore
>>>HCS Prio	O		9.2.1.30N		YES	ignore
>>>Primary CPICH Usage For Channel Estimation	O		9.2.2.32A		YES	ignore
>>>Secondary CPICH Information	O		9.2.2.38A		YES	ignore
>>DSCH-RNTI	O		9.2.1.26Ba		YES	ignore
>>HS-DSCH-RNTI	O		9.2.1.30P		YES	reject
Uplink SIR Target	O		Uplink SIR 9.2.1.69		YES	ignore
Criticality Diagnostics	O		9.2.1.13		YES	ignore

Range bound	Explanation
MaxnoofRLs	Maximum number of RLs for one UE.

9.1.24 UPLINK SIGNALLING TRANSFER INDICATION

9.1.24.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	ignore
Transaction ID	M		9.2.1.59		–	
UC-ID	M		9.2.1.71		YES	ignore
SAI	M		9.2.1.52		YES	ignore
Cell GAI	O		9.2.1.5A		YES	ignore
C-RNTI	M		9.2.1.14		YES	ignore
S-RNTI	M		9.2.1.54		YES	ignore
D-RNTI	O		9.2.1.24		YES	ignore
Propagation Delay	M		9.2.2.33		YES	ignore
STTD Support Indicator	M		9.2.2.45		YES	ignore
Closed Loop Mode1 Support Indicator	M		9.2.2.2		YES	ignore
Closed Loop Mode2 Support Indicator	M		9.2.2.3		YES	ignore
L3 Information	M		9.2.1.32		YES	ignore
CN PS Domain Identifier	O		9.2.1.12		YES	ignore
CN CS Domain Identifier	O		9.2.1.11		YES	ignore
URA Information	O		9.2.1.70B		YES	ignore
Cell GA Additional Shapes	O		9.2.1.5B		YES	ignore
DPC Mode Change Support Indicator	O		9.2.2.56		YES	ignore
Common Transport Channel Resources Initialisation not required	O		9.2.1.12F		YES	Ignore
Cell Capability Container FDD	O		9.2.2.D		YES	ignore
SNA Information	O		9.2.1.52Ca		YES	ignore
Cell Portion ID	O		9.2.2.xx		YES	ignore

9.2.2.xx Cell Portion ID

Cell Portion ID is the unique identifier for a cell portion within a cell. See [11].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Cell Portion ID			INTEGER (0..63,…)	

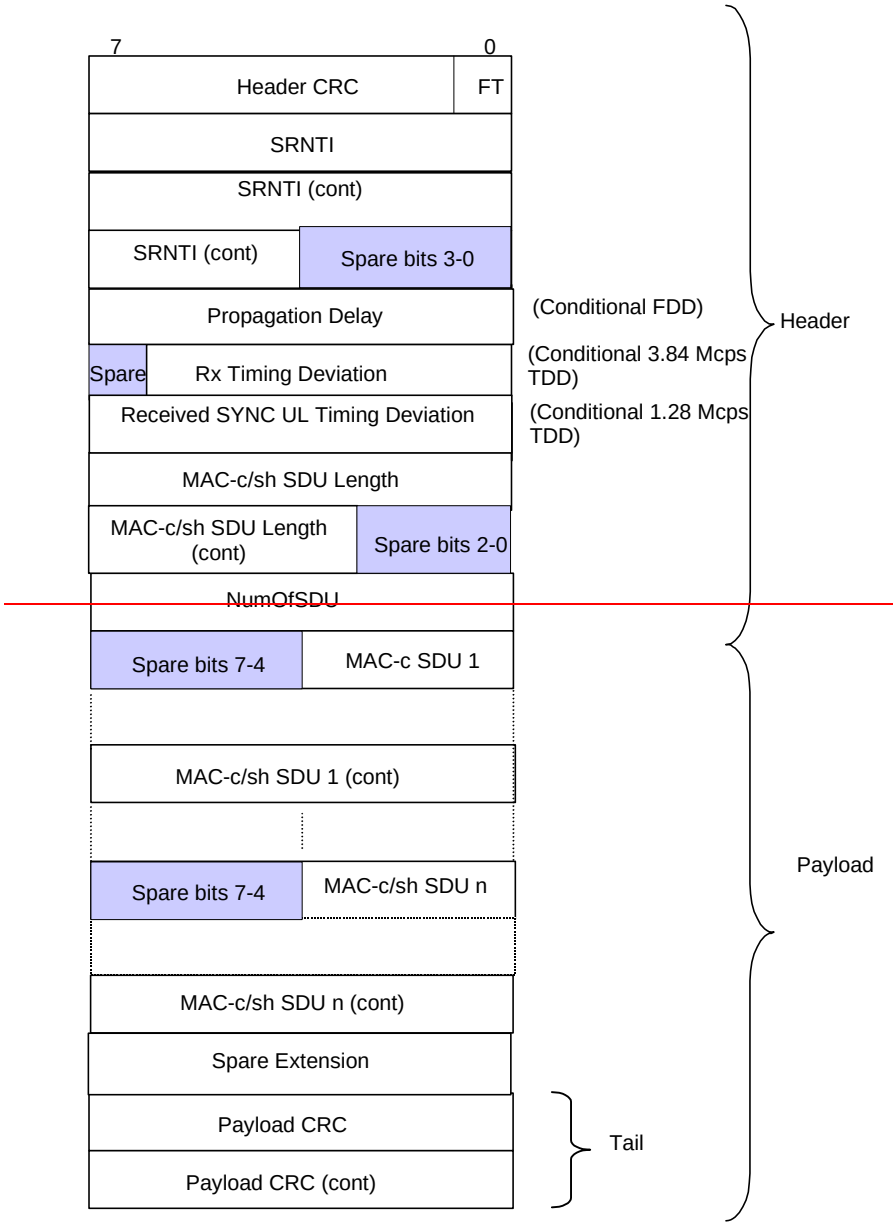
The changes required in TS25.425

6.2.1 RACH/CPCH[FDD] Channels

RACH/CPCH[FDD] Iur data stream corresponds to the data stream of one specific UE. The used transport bearer for the transport of FACH/RACH or FACH/CPCH[FDD] is bi-directional.

The RACH/CPCH[FDD]/FACH FP does not facilitate multiplexing of data streams from different UEs onto the same data frame, but does allow multiple UEs to share the same transport bearer.

The RACH DATA FRAME structure is defined as common for FDD and TDD with conditional fields, and CPCH[FDD] DATA FRAME structure is defined as common for FDD only.


7
0
Header CRC
FT
SRNTI
SRNTI (cont)
SRNTI (cont)
Spare bits 3-0
Propagation Delay
(Conditional FDD)
Spare
Rx Timing Deviation
(Conditional 3.84 Mcps TDD)
Received SYNC UL Timing Deviation
(Conditional 1.28 Mcps TDD)
MAC-c/sh SDU Length
MAC-c/sh SDU Length (cont)
Spare bits 2-0
NumOfSDU
Header
Spare bits 7-4
MAC-c SDU 1
MAC-c/sh SDU 1 (cont)
Spare bits 7-4
MAC-c/sh SDU n
Payload
MAC-c/sh SDU n (cont)
Spare Extension
Payload CRC
Payload CRC (cont)
Tail

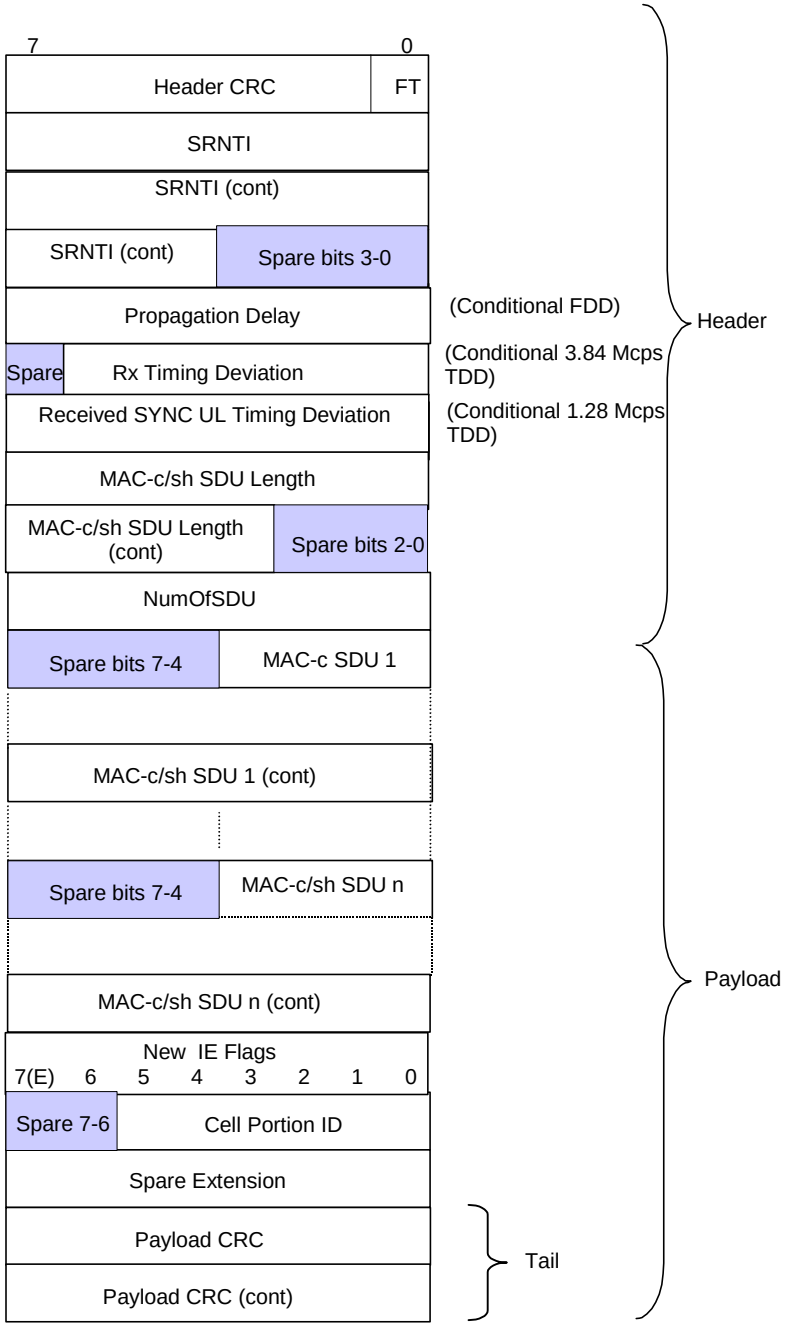


Figure 9: RACH/CPCH[FDD] DATA FRAME structure

Propagation delay is a conditional Information Element which is only present when the Cell supporting the RACH/CPCH[FDD] Transport Channel is a FDD Cell.

Rx Timing Deviation is a conditional Information Element which is only present when the Cell supporting the RACH Transport Channel is a 3.84 Mcps TDD Cell.

Received SYNC UL Timing Deviation is a conditional Information Element which is only present when the Cell supporting the RACH Transport Channel is a 1.28 Mcps TDD Cell.

[FDD- Bit 0 of New IE Flags in RACH DATA FRAME indicates if the 1st byte (bits 0-5) following the *New IE Flags* IE contains a valid Cell Portion ID (1) or not (0).]

[FDD - Field length of *Spare Extension* IE in RACH DATA FRAME is 0-30 octets.]

6.2.5.xxCell Portion ID [FDD]

Description: Cell Portion ID indicates the cell portion with highest SIR during RACH access. Cell Portion ID is configured by O&M.

Value range: {0-63}.

Field Length: 6 bits

6.2.7.xyNew IE Flags

Description: Contains flags indicating which information is valid in the fields following the *New IE Flags* IE. The last bit position of the *New IE Flags* IE is used as the Extension Flag to allow the extension of the *New IE Flags* IE in the future

Value range:

Bit 0-6: Indicates if the bytes following the *New IE Flags* IE contains a valid data (1) or not (0). The meaning of each bit is explained in the corresponding DATA FRAME subclause;

Bit7 : Indicates if the 1st byte following the *New IE Flags* IE and the corresponding IEs has additional *New IE Flags* IE (1) or not (0).

Field length: 8 bits.

The changes required in TS25.433

8.2.8.2 Succesful Operation of Common Measurement Initiation

On common measurement type, add a statement that:

If the *Common Measurement Type* IE is set to "Received Total Wide Band Power for Cell Portion", "Transmitted Carrier Power for Cell Portion" or "Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission for Cell Portion", the Node B shall initiate the corresponding measurements for all the cell portions which are configured under the cell indicated by *C-ID* IE in the COMMON MEASUREMENT INITIATION REQUEST message.

On report characteristics for each event (A, B, C, D, E, F), add a statement that:

If the *Common Measurement Type* IE is set to "Received Total Wide Band Power for Cell Portion", "Transmitted Carrier Power for Cell Portion" or "Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission for Cell Portion", the measurement entity to be considered is the corresponding measurement for each cell portion.

On response message, add a statement that:

If the *Common Measurement Type* IE is set to "Received Total Wide Band Power for Cell Portion", "Transmitted Carrier Power for Cell Portion" or "Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission for Cell Portion" and the *Report Characteristics* IE is set to "On Demand", all the available measurement results for each cell portion shall be included in the COMMON MEASUREMENT INITIATION RESPONSE message.

Section 8.2.8.4 Abnormal Conditions

Table 4 is amended as:

Table 4: Allowed Common Measurement Type and Report Characteristics Type combinations

Common Measurement Type	Report Characteristics Type								
	On Demand	Periodic	Event A	Event B	Event C	Event D	Event E	Event F	On Modification
Received Total Wide Band Power	X	X	X	X	X	X	X	X	
Transmitted Carrier Power	X	X	X	X	X	X	X	X	
Acknowledged PRACH Preambles	X	X	X	X	X	X	X	X	
UL Timeslot ISCP	X	X	X	X	X	X	X	X	
Acknowledged PCPCH Access Preambles	X	X	X	X	X	X	X	X	
Detected PCPCH Access Preambles	X	X	X	X	X	X	X	X	
UTRAN GPS Timing of Cell Frames for UE Positioning	X	X							X
SFN-SFN Observed Time Difference	X	X							X
Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission	X	X	X	X	X	X	X	X	
HS-DSCH Required Power	X	X	X	X			X	X	
HS-DSCH Provided Bit Rate	X	X	X	X			X	X	
Received Total Wide Band Power for Cell Portion	X	X	X	X	X	X	X	X	
Transmitted Carrier Power for Cell Portion	X	X	X	X	X	X	X	X	
Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission for Cell Portion	X	X	X	X	X	X	X	X	

If the *SFN* IE is included in the COMMON MEASUREMENT INITIATION REQUEST message and the *Report Characteristics* IE is other than "Periodic", "On Demand" or "On Modification", the Node B shall regard the Common Measurement Initiation procedure as failed.

8.2.9 Common Measurement Reporting

On section 8.2.9.2 on Successful Operation add a statement that:

For Received Total Wide Band Power for Cell Portion, Transmitted Carrier Power for Cell Portion, Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission for Cell Portion measurements, all the available measurement results for each cell portion shall be included in the COMMON MEASUREMENT REPORT message.

8.2.17 Radio Link Setup

On phase reference handling on successful operation add a statement that:

[FDD – If the RADIO LINK SETUP REQUEST message includes the *Secondary CPICH Information* IE, the Node B shall assume that the UE may use the Secondary CPICH indicated by the *Common Physical Channel ID* IE for channel estimation.]

9.1.24 CELL SETUP REQUEST

9.1.24.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
Transaction ID	M		9.2.1.62		–	
Local Cell ID	M		9.2.1.38		YES	reject
C-ID	M		9.2.1.9		YES	reject
Configuration Generation ID	M		9.2.1.16		YES	reject
T Cell	M		9.2.2.49		YES	reject
UARFCN	M		9.2.1.65	Corresponds to Nu [14]	YES	reject
UARFCN	M		9.2.1.65	Corresponds to Nd [14]	YES	reject

Maximum Transmission Power	M		9.2.1.40		YES	reject
Closed Loop Timing Adjustment Mode	O		9.2.2.2A		YES	reject
Primary Scrambling Code	M		9.2.2.34		YES	reject
Synchronisation Configuration		*1*			YES	reject
>N_INSYNC_IND	M		9.2.1.47A		–	
>N_OUTSYNC_IND	M		9.2.1.47B		–	
>T_RLFAILURE	M		9.2.1.56A		–	
DL TPC Pattern 01 Count	M		9.2.2.13A		YES	reject
Primary SCH Information		*1*			YES	reject
>Common Physical Channel ID	M		9.2.1.13		–	
>Primary SCH Power	M		DL Power 9.2.1.21		–	
>TSTD Indicator	M		9.2.1.64		–	
Secondary SCH Information		*1*			YES	reject
>Common Physical Channel ID	M		9.2.1.13		–	
>Secondary SCH Power	M		DL Power 9.2.1.21		–	
>TSTD Indicator	M		9.2.1.64		–	
Primary CPICH Information		*1*			YES	reject
>Common Physical Channel ID	M		9.2.1.13		–	
>Primary CPICH power	M		9.2.2.33		–	
>Transmit Diversity Indicator	M		9.2.2.53		–	
Secondary CPICH Information		*0..<maxSCPICHCell>*			EACH	reject
>Common Physical Channel ID	M		9.2.1.13		–	
>DL Scrambling Code	M		9.2.2.13		–	
>FDD DL Channelisation Code Number	M		9.2.2.14		–	
>Secondary CPICH Power	M		DL Power 9.2.1.21		–	
>Transmit Diversity Indicator	M		9.2.2.53		–	
Primary CCPCH Information		*1*			YES	reject
>Common Physical Channel ID	M		9.2.1.13		–	
>BCH Information		*1*			–	
>>Common Transport Channel ID	M		9.2.1.14		–	
>>BCH Power	M		DL Power 9.2.1.21		–	
>STTD Indicator	M		9.2.2.48		–	
Limited Power Increase Information		*1*			YES	reject
>Power_Raise_Limit	M		9.2.2.29A		–	
>DL_power_averaging_window_size	M		9.2.2.12A		–	
IPDL Parameter Information		*0..1*			YES	reject
>IPDL FDD Parameters	M		9.2.2.18C		–	
>IPDL Indicator	M		9.2.1.36F		–	
PDSCH information		*0..1*			YES	reject
>Maximum PDSCH Power	O		9.2.2.21A		–	
Cell Portion Information		*0..<maxnoofCellPortions>*			EACH	reject
>Cell Portion ID	M		9.2.2.1Ca		–	
>Associated Secondary	M		Common		–	

CPICH			Physical Channel ID 9.2.1.13			

Range Bound	Explanation
MaxSCPICHCell	Maximum number of Secondary CPICHs that can be defined in a Cell.

9.1.36 RADIO LINK SETUP REQUEST

9.1.36.1 FDD message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
Transaction ID	M		9.2.1.62		–	
CRNC Communication Context ID	M		9.2.1.18	The reserved value "All CRNCCC" shall not be used.	YES	reject
UL DPCH Information		*1*			YES	reject
>UL Scrambling Code	M		9.2.2.59		–	
>Min UL Channelisation Code Length	M		9.2.2.22		–	
>Max Number of UL DPDCHs	C-CodeLen		9.2.2.21		–	
>Puncture Limit	M		9.2.1.50	For UL	–	
>TFCS	M		9.2.1.58	For UL	–	
>UL DPCCH Slot Format	M		9.2.2.57		–	
> UL SIR Target	M		UL SIR 9.2.1.67A		–	
>Diversity Mode	M		9.2.2.9		–	
>SSDT Cell ID Length	O		9.2.2.45		–	
>S Field Length	O		9.2.2.40		–	
>DPC Mode	O		9.2.2.13C		YES	reject
DL DPCH Information		*1*			YES	reject
>TFCS	M		9.2.1.58	For DL	–	
>DL DPCH Slot Format	M		9.2.2.10		–	
>TFCI Signalling Mode	M		9.2.2.50		–	
>TFCI Presence	C-SlotFormat		9.2.1.57		–	
>Multiplexing Position	M		9.2.2.23		–	
>PDSCH RL ID	C-DSCH		RL ID 9.2.1.53		–	
>PDSCH Code Mapping	C-DSCH		9.2.2.25		–	
>Power Offset Information		*1*			–	
>>PO1	M		Power Offset 9.2.2.29	Power offset for the TFCI bits	–	
>>PO2	M		Power Offset 9.2.2.29	Power offset for the TPC bits	–	
>>PO3	M		Power Offset 9.2.2.29	Power offset for the pilot bits	–	
>FDD TPC DL Step Size	M		9.2.2.16		–	
>Limited Power Increase	M		9.2.2.18A		–	
>Inner Loop DL PC Status	M		9.2.2.18B		–	
DCH Information	M		DCH FDD Information 9.2.2.4D		YES	reject
DSCH Information	O		DSCH FDD Information 9.2.2.13B		YES	reject
TFCI2 bearer information		*0..1*			YES	ignore
>ToAWS	M		9.2.1.61		–	
>ToAWE	M		9.2.1.60		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment	YES	ignore

				with ALCAP.		
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
RL Information		*1..<maxnoofRLs>*			EACH	notify
>RL ID	M		9.2.1.53		–	
>C-ID	M		9.2.1.9		–	
>First RLS Indicator	M		9.2.2.16A		–	
>Frame Offset	M		9.2.1.31		–	
>Chip Offset	M		9.2.2.2		–	
>Propagation Delay	O		9.2.2.35		–	
>Diversity Control Field	C-NotFirstRL		9.2.1.25		–	
>DL Code Information	M		FDD DL Code Information 9.2.2.14A		–	
>Initial DL Transmission Power	M		DL Power 9.2.1.21	Initial power on DPCH	–	
>Maximum DL Power	M		DL Power 9.2.1.21	Maximum allowed power on DPCH	–	
>Minimum DL Power	M		DL Power 9.2.1.21	Minimum allowed power on DPCH	–	
>SSDT Cell Identity	O		9.2.2.44		–	
>Transmit Diversity Indicator	C-Diversity mode		9.2.2.53		–	
>SSDT Cell Identity For EDSCHPC	C-EDSCHPC		9.2.2.44A		YES	ignore
>RL Specific DCH Information	O		9.2.1.53G		YES	ignore
>Delayed Activation	O		9.2.1.24C		YES	reject
>Qth Parameter	O		9.2.2.36A		YES	ignore
>Primary CPICH Usage For Channel Estimation	O		9.2.2.33A		YES	ignore
>Secondary CPICH Information	O		Common Physical Channel ID 9.2.1.13		YES	ignore
Transmission Gap Pattern Sequence Information	O		9.2.2.53A		YES	reject
Active Pattern Sequence Information	O		9.2.2.A		YES	reject
DSCH Common Information	O		DSCH FDD Common Information 9.2.2.13D		YES	ignore
DL Power Balancing Information	O		9.2.2.12B		YES	ignore
HS-DSCH Information	O		HS-DSCH FDD Information 9.2.2.18D		YES	reject
HS-DSCH-RNTI	C-InfoHSDSCH		9.2.1.31J		YES	reject
HS-PDSCH RL ID	C-InfoHSDSCH		RL ID 9.2.1.53		YES	reject

Condition	Explanation
CodeLen	The IE shall be present if *Min UL Channelisation Code Length* IE equals to 4.
NotFirstRL	The IE shall be present if the RL is not the first one in the *RL Information* IE.
DSCH	The IE shall be present if the *DSCH Information* IE is present.
SlotFormat	The IE shall be present if the *DL DPCH Slot Format* IE is equal to any of the values from 12 to 16.
Diversity mode	The IE shall be present if *Diversity Mode* IE in *UL DPCH Information* IE is not set to "none".
EDSCHPC	The IE shall be present if *Enhanced DSCH PC* IE is present in the *DSCH Common Information* IE.
InfoHSDSCH	The IE shall be present if *HS-DSCH Information* IE is present.

Range Bound	Explanation
MaxnoofRLs	Maximum number of RLs for one UE

9.2.1.11 Common Measurement Type

The Common Measurement Type identifies which measurement that shall be performed.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Common Measurement Type			ENUMERATED (Received Total Wide Band Power, Transmitted Carrier Power, Acknowledged PRACH Preambles, UL Timeslot ISCP, Acknowledged PCPCH Access Preambles, Detected PCPCH Access Preambles, …, UTRAN GPS Timing of Cell Frames for UE Positioning, SFN-SFN Observed Time Difference, Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission, HS-DSCH Required Power, HS-DSCH Provided Bit Rate, Received Total Wide Band Power for Cell Portion, Transmitted Carrier Power for Cell Portion, Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission for Cell Portion)	"UL Timeslot ISCP" is used by TDD only, "Acknowledged PRACH Preambles", 'Acknowledged PCPCH Access Preambles', 'Detected PCPCH Access Preambles' are used by FDD only

9.2.1.12 Common Measurement Value

The Common Measurement Value shall be the most recent value for this measurement, for which the reporting criteria were met.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Common Measurement Value*					–	
>Transmitted Carrier Power					–	
>>Transmitted Carrier Power Value	M		INTEGER (0..100)	According to mapping in [22] and [23]	–	
>Received Total Wide Band Power					–	
>>Received Total Wide Band Power Value	M		INTEGER (0..621)	According to mapping in [22] and [23]	–	
>Acknowledged PRACH Preambles				FDD Only	–	
>>Acknowledged PRACH Preamble Value	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>UL Timeslot ISCP				TDD Only	–	
>>UL Timeslot ISCP	M		INTEGER (0..127)	According to mapping in [23]	–	
>Acknowledged PCPCH Access Preambles				FDD Only	–	
>>Acknowledged PCPCH Access Preambles	M		INTEGER (0..15,…)	According to mapping in [22]	–	
>Detected PCPCH Access Preambles				FDD Only	–	
>>Detected PCPCH Access Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>Additional Common Measurement Values					–	
>>UTRAN GPS Timing of Cell Frames for UE Positioning					–	
>>>$T_{UTRAN-GPS}$ Measurement Value Information	M		9.2.1.64A		YES	Ignore
>>SFN-SFN Observed Time Difference					–	
>>>SFN-SFN Measurement Value Information	M		9.2.1.53E		YES	Ignore
>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission					–	
>>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission Value	M		INTEGER (0..100)	According to mapping in [22] and [23]	YES	Ignore
>>HS-DSCH Required Power					–	
>>>HS-DSCH Required Power Value Information	M		9.2.1.31Ic		YES	Ignore
>>HS-DSCH Provided Bit Rate					–	
>>>HS-DSCH Provided Bit Rate	M		9.2.1.31Ib		YES	Ignore
>>Transmitted Carrier Power For Cell Portion					–	

>>>**Transmitted Carrier Power For Cell Portion Value**		*1..< maxNrOfCellPortions>*		FDD Only	GLOBAL	ignore
>>>>Cell Portion ID	M		9.2.2.1Ca		–	
>>>>Transmitted Carrier Power Value	M		INTEGER (0..100)	According to mapping in [22]	–	
>>Received Total Wide Band Power For Cell Portion					–	
>>>**Received Total Wide Band Power For Cell Portion Value**		*1..< maxNrOfCellPortions>*		FDD Only	GLOBAL	ignore
>>>>Cell Portion ID	M		9.2.2.1Ca		–	
>>>>Received Total Wide Band Power Value	M		INTEGER (0..621)	According to mapping in [22]	–	
>>Transmitted Carrier Power Of All Codes Not Used For HS-PDSCH Or HS-SCCH Transmission For Cell Portion					–	
>>>**Transmitted Carrier Power Of All Codes Not Used For HS-PDSCH Or HS-SCCH Transmission For Cell Portion Value**		*1..< maxNrOfCellPortions>*		FDD Only	GLOBAL	ignore
>>>>Cell Portion ID	M		9.2.2.1Ca		–	
>>>>Transmitted Carrier Power Of All Codes Not Used For HS-PDSCH Or HS-SCCH Transmission Value	M		INTEGER (0..100)	According to mapping in [22]	–	

Range Bound	**Explanation**
MaxNrOfCellPortions	Maximum number of Cell Portions in a cell

9.2.1.43 Measurement Increase/Decrease Threshold

The Measurement Increase/Decrease Threshold defines the threshold that shall trigger Event C or D.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Measurement Increase/Decrease Threshold*					–	
>Received Total Wide Band Power					–	
>>Received Total Wide Band Power	M		INTEGER (0..620)	Unit: dB Range: 0..62 dB Step: 0.1 dB	–	
>Transmitted Carrier Power					–	
>>Transmitted Carrier Power	M		INTEGER (0..100)	According to mapping in [22] and [23]	–	
>Acknowledged PRACH Preambles				FDD only	–	
>>Acknowledged PRACH Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>UL Timeslot ISCP				TDD only	–	
>>UL Timeslot ISCP	M		INTEGER (0..126)	Unit: dB Range: 0..63 dB Step: 0.5 dB	–	
>SIR					–	
>>SIR	M		INTEGER (0..62)	Unit: dB Range: 0..31 dB Step: 0.5 dB	–	
>SIR Error				FDD only	–	
>>SIR Error	M		INTEGER (0..124)	Unit: dB Range: 0..62 dB Step: 0.5 dB	–	
>Transmitted Code Power					–	
>>Transmitted Code Power	M		INTEGER (0..112,…)	Unit: dB Range: 0..56 dB Step: 0.5 dB	–	
>RSCP				TDD only	–	
>>RSCP	M		INTEGER (0..126)	Unit: dB Range: 0..63 dB Step: 0.5 dB	–	
>Round Trip Time				FDD only	–	
>>Round Trip Time	M		INTEGER (0..32766)	Unit: chips Range: 0 .. 2047.875 chips Step: 0.625 chips	–	
>Acknowledged PCPCH Access Preambles				FDD only	–	
>>Acknowledged PCPCH Access Preambles	M		INTEGER (0..15,…)	According to mapping in [22]	–	
>Detected PCPCH Access Preambles				FDD only	–	
>>Detected PCPCH Access Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>Additional Measurement Thresholds					–	
>> Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission					–	
>>>Transmitted carrier power of all codes not used for HS-PDSCH or	M		INTEGER (0..100)	According to mapping in [22] and [23]	YES	Reject

HS-SCCH transmission						
>>Transmitted Carrier Power For Cell Portion				FDD only	–	
>>>Transmitted Carrier Power For Cell Portion	M		INTEGER (0..100)	Mapping identical to the one for Transmitted Carrier Power measurement in [22]	YES	reject
>>Received Total Wide Band Power For Cell Portion				FDD only	–	
>>>Received Total Wide Band Power For Cell Portion	M		INTEGER (0..620)	Unit: dB Range: 0..62 dB Step: 0.1 dB	YES	reject
>>Transmitted Carrier Power Of All Codes Not Used For HS-PDSCH Or HS-SCCH Transmission For Cell Portion				FDD only	–	
>>>Transmitted Carrier Power Of All Codes Not Used For HS-PDSCH Or HS-SCCH Transmission For Cell Portion	M		INTEGER (0..100)	Mapping identical to the one for Transmitted Carrier Power Of All Codes Not Used For HS-PDSCH Or HS-SCCH Transmission measurement in [22]	YES	reject

9.2.1.44 Measurement Threshold

The Measurement Threshold defines which threshold that shall trigger Event A, B, E, F or On Modification.

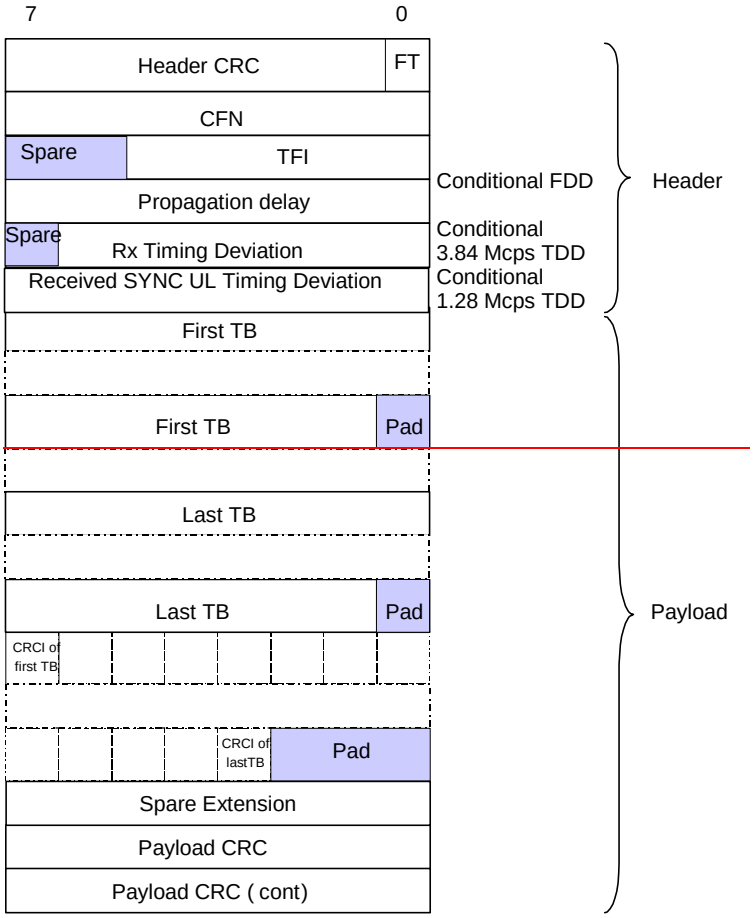
IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE *Measurement Threshold*					–	
>*Received Total Wide Band Power*					–	
>>Received Total Wide Band Power	M		INTEGER (0..621)	According to mapping in [22] and [23]	–	
>*Transmitted Carrier Power*					–	
>>Transmitted Carrier Power	M		INTEGER (0..100)	According to mapping in [22] and [23]	–	
>*Acknowledged PRACH Preambles*				FDD only	–	
>>Acknowledged PRACH Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>*UL Timeslot ISCP*				TDD only	–	
>>UL Timeslot ISCP	M		INTEGER (0..127)	According to mapping in [23]	–	
>*SIR*					–	
>>SIR	M		INTEGER (0..63)	According to mapping in [22] and [23]	–	
>*SIR Error*				FDD only	–	
>>SIR Error	M		INTEGER (0..125)	According to mapping in [22]	–	
>*Transmitted Code Power*					–	
>>Transmitted Code Power	M		INTEGER (0..127)	According to mapping in [22] and [23]	–	
>*RSCP*				TDD only	–	
>>RSCP	M		INTEGER (0..127)	According to mapping in [23]	–	
>*Rx Timing Deviation*				Applicable to 3.84Mcps TDD only	–	
>>Rx Timing Deviation	M		INTEGER (0..8191)	According to mapping in [23]	–	
>*Round Trip Time*				FDD only	–	
>>Round Trip Time	M		INTEGER (0..32767)	According to mapping in [22]	–	
>*Acknowledged PCPCH Access Preambles*				FDD only	–	
>>Acknowledged PCPCH Access Preambles	M		INTEGER (0..15,…)	According to mapping in [22]	–	
>*Detected PCPCH Access Preambles*				FDD only	–	
>>Detected PCPCH Access Preambles	M		INTEGER (0..240,…)	According to mapping in [22]	–	
>*Additional Measurement Thresholds*					–	
>>*UTRAN GPS Timing of Cell Frames for UE Positioning*					–	
>>>$T_{UTRAN-GPS}$ Measurement Threshold Information	M		9.2.1.64B		YES	reject
>>*SFN-SFN Observed Time Difference*					–	
>>>SFN-SFN Measurement Threshold Information	M		9.2.1.53C		YES	reject
>>*Rx Timing Deviation LCR*				Applicable to 1.28Mcps TDD Only	–	
>>>Rx Timing	M		INTEGER	According to mapping	YES	reject

Deviation LCR			(0..255)	in [23]		
>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission					–	
>>>Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission	M		INTEGER (0..100)	According to mapping in [22] and [23]	YES	reject
>>HS-SICH reception quality				Applicable to TDD Only	–	
>>>HS-SICH reception quality	M		INTEGER (0..20)	According to mapping in [23]	YES	reject
>>HS-DSCH Required Power					–	
>>>HS-DSCH Required Power Value Information	M		9.2.1.31Ic		YES	reject
>>HS-DSCH Provided Bit Rate					–	
>>>HS-DSCH Provided Bit Rate Value Information	M		9.2.1.31Ib		YES	reject
>>Transmitted Carrier Power For Cell Portion				FDD only	–	
>>>Transmitted Carrier Power For Cell Portion	M		INTEGER (0..100)	Mapping identical to the one for Transmitted Carrier Power measurement in [22]	YES	reject
>>Received Total Wide Band Power For Cell Portion				FDD only	–	
>>>Received Total Wide Band Power For Cell Portion	M		INTEGER (0..621)	Mapping identical to the one for Received Total Wide Band Power measurement in [22]	YES	reject
>>Transmitted Carrier Power Of All Codes Not Used For HS-PDSCH Or HS-SCCH Transmission For Cell Portion				FDD only	–	
>>> Transmitted Carrier Power Of All Codes Not Used For HS-PDSCH Or HS-SCCH Transmission Value For Cell Portion	M		INTEGER (0..100)	Mapping identical to the one for Transmitted Carrier Power Of All Codes Not Used For HS-PDSCH Or HS-SCCH Transmission measurement in [22]	YES	reject

The changes required in TS25.435

6.2.1 RACH Channels

The RACH DATA FRAME includes the CFN corresponding to the SFN of the frame in which the payload was received. If the payload was received in several frames, the CFN corresponding to the first Uu frame in which the information was received shall be indicated.


7
0
Header CRC
FT
CFN
Spare
TFI
Propagation delay
Spare
Rx Timing Deviation
Received SYNC UL Timing Deviation
First TB
First TB
Pad
Last TB
Last TB
Pad
CRCI of first TB
CRCI of lastTB
Pad
Spare Extension
Payload CRC
Payload CRC (cont)
Conditional FDD
Conditional 3.84 Mcps TDD
Conditional 1.28 Mcps TDD
Header
Payload

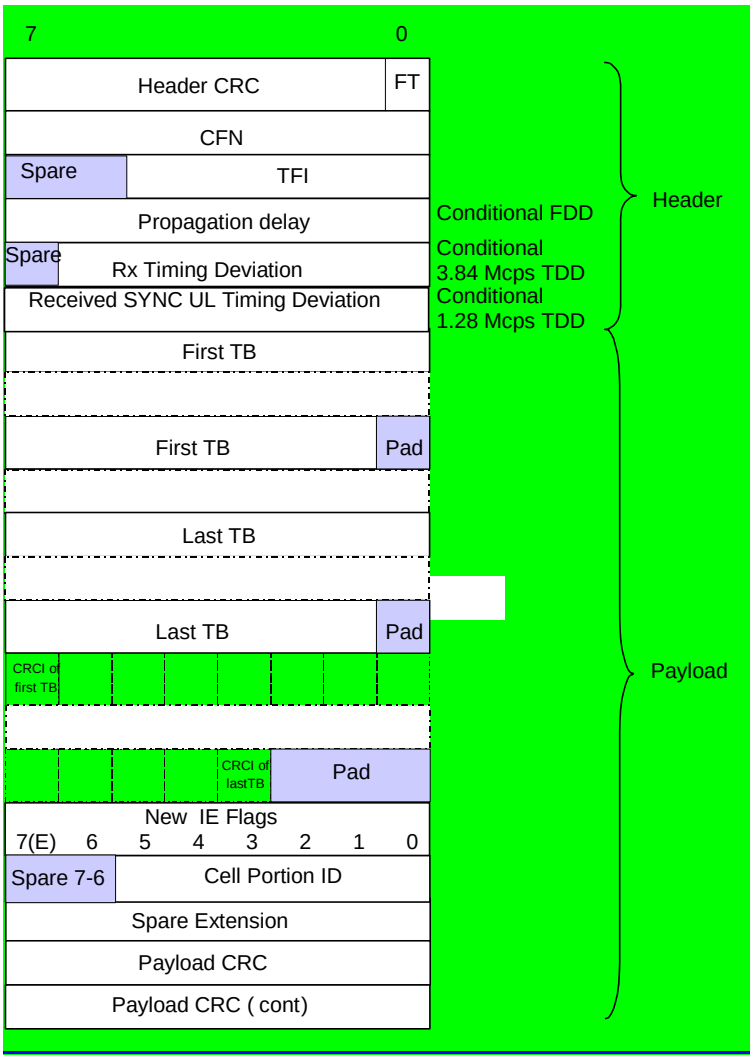


Figure 15: RACH DATA FRAME structure

Propagation Delay is a conditional Information Element which is only present when the Cell supporting the RACH Transport Channel is a FDD Cell.

Rx Timing Deviation is a conditional Information Element which is only present when the Cell supporting the RACH Transport Channel is a 3.84 Mcps TDD Cell.

Received SYNC UL Timing Deviation is a conditional Information Element which is only present when the Cell supporting the RACH Transport Channel is a 1.28Mcps TDD Cell.

[FDD- Bit 0 of New IE Flags in RACH DATA FRAME indicates if the 1st byte (bits 0-5) following the *New IE Flags* IE contains a valid Cell Portion ID (1) or not (0).]

[FDD - Field length of *Spare Extension* IE in RACH DATA FRAME is 0-30 octets.]

6.2.7.xxCell Portion ID [FDD]

Description: Cell Portion ID indicates the cell portion with highest SIR during RACH access. Cell Portion ID is configured by O&M.

Value range: {0-63}.

Field Length: 6 bits

6.2.7.xyNew IE Flags

Description: Contains flags indicating which information is valid in the fields following the *New IE Flags* IE. The last bit position of the *New IE Flags* IE is used as the Extension Flag to allow the extension of the *New IE Flags* IE in the future

Value range:

Bit 0-6: Indicates if the bytes following the *New IE Flags* IE contains a valid data (1) or not (0). The meaning of each bit is explained in the corresponding DATA FRAME subclause;

Bit7 : Indicates if the 1st byte following the *New IE Flags* IE and the corresponding IEs has additional *New IE Flags* IE (1) or not (0).

Field length: 8 bits.

7.3 RAN WG4

RAN WG4 agreed that Release'5 performance requirements are covering all the situations in order to be in compliance with the definition of the RRM measurements for beamforming enhancements. Thus, no new performance requirements are needed for efficient support of RRM, and no changes to RAN WG4 specifications are needed.

Annex A (informative): Node B implementation aspects

Flexible beamforming generally requires a calibrated array in both uplink and downlink. In the uplink this means that the relative phase between the signals is controlled (to within some margin of error), from the antenna elements until the beams are formed by the application of the weight vector and summation. This may require special measures in the antenna network, feeder system and within the Node B itself (filters, mixers, LNAamplifiers etc.), depending where and how the application of the weight vector and summation is performed. In the uplink these measures would not be required in the absence of beamforming antennas, even in the case of alternative proprietary solutions for weighting and combining signals from an antenna array.

Similarly, flexible beamforming on the downlink requires that the relative phase between the signals is controlled (to within some margin of error), from the point where the signal to be transmitted in a beam is split in to one path per antenna (prior to application of the weight vector), until the antenna elements. This may require special measures in the antenna network, feeder system and within the Node B itself (filters, mixers, power amplifiers etc.) depending where and how the application of the weight vector is applied.

For cases where the beams are generated externally to the Node B, the above mentioned requirements do not apply.

Annex B:
Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
23.11.01	RAN1#22	R1-01-1342			Approved in RAN WG1 to be provided for TSG-RAN for information	0.0.1	1.0.0
16.05.01	RAN1#26	R1-02-0767			Approved in RAN WG1 to be provided for TSG-RAN for information	1.0.0	1.1.0
09.10.02	RAN1#28 b	R1-02-1253			Updated in RAN WG1#28bis based on text proposal in R1-02-1185	1.1.0	1.2.0
23.10.02	RAN1#28 b	R1-02-1260			Distributed for review on RAN WG1 reflector.	1.2.0	1.3.0
12.12.03	RAN#22				Agreed changes to RAN specifications reflected in the TR	1.3.0	1.3.1
12.12.03	RAN#22	R1-040188			For RAN WG1 review before final approval at RAN#23	1.3.1	1.7.0
19.02.04	RAN1#36	R1-040375			Revised for RAN1 endorsement.	1.7.0	1.7.1
20.02.04	RAN1#36	R1-040377			Approved in RAN WG1 to be provided for TSG-RAN for endorsement.	1.7.1	2.0.0

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