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

TSGRP#6(99)772

Title: **Agreed CRs of category "C" (Modifications) and "F" (Corrections) to TS 25.101**

Source: **TSG-RAN WG4**

Agenda item: **5.4.3**

TSG_DOC	SPEC	CR	RE	3G_P	SUBJECT	CAT	VERS_CUR	VERS_NEW
R4-99752	25.101	003		R99	Modifications for Receiver Characteristics	F	3.0.0	3.1.0
R4-99756	25.101	004		R99	Corrections to Tx Diversity testing assumptions	F	3.0.0	3.1.0
R4-99847	25.101	001	2	R99	Correction of UE Measurement Channels Rev.2	F	3.0.0	3.1.0
R4-99857	25.101	006		R99	Corrections to Annex C Down link Physical Channels	F	3.0.0	3.1.0
R4-99860	25.101	007		R99	Proposal for ACLR/ACS specifications for class 3	F	3.0.0	3.1.0
R4-99929	25.101	009		R99	Clarification of Uplink inner loop power control requirements	C	3.0.0	3.1.0
R4-99932	25.101	011		R99	Power setting of DPCH	C	3.0.0	3.1.0
R4-99937	25.101	014		R99	Update of ITU Region 2 Specific Specifications and proposed universal channel numbering	C	3.0.0	3.1.0
R4-99966	25.101	015		R99	Performance requirements for demodulation of DCH in Site Selection	F	3.0.0	3.1.0
R4-99977	25.101	016		R99	Change of propagation conditions	F	3.0.0	3.1.0
R4-99992	25.101	017		R99	CR for minimum requirements for UE power class 1 and 2 in 25.101	F	3.0.0	3.1.0
R4-99998	25.101	018		R99	Downlink Inner loop power control	C	3.0.0	3.1.0

3GPP TSG-RAN WG4 meeting #8
Sophia Antipolis, France, 26th -29th of Oct. 1999

Document

3G CHANGE REQUEST

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25.101	**CR**	**003**	Current Version:	3.0.0
3G specification number ↑		*↑ CR number as allocated by 3G support team*		

For submision to TSG	RAN#6	for approval	**X**	*(only one box should*
list TSG meeting no. here ↑		for information		*be marked with an X)*

Form: 3G CR cover sheet, version 1.0   The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

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

Source: TSG RAN WG4   **Date:**

Subject: Clarification to section 7 static receiver characteristics.

3G Work item: UTRA

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

F	Correction	**X**
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Reason for change: The terminology and definitions in current specification are not correct ones, and the values in this section does not correspond to physical channel simulation, which are based on physical channel definitions in annex C.

Clauses affected: Section 7.3, 7.4, 7.5, 7.6, 7.7 and 7.8, annex C

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other 2G core specifications		→ List of CRs:	
MS test specifications	**X**	→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

7.3 Reference sensitivity level

The reference sensitivity is the minimum receiver input power measured at the antenna port at which the Bit Error Rate (BER) does not exceed a specific value

7.3.1 Minimum requirement

The BER shall not exceed 0.001 for the parameters specified in Table 12

~~**Table 12: Test parameters for reference sensitivity**~~

~~**Parameter**~~	~~**Unit**~~	~~**Level**~~
$\frac{PCCPCH\_Ec}{I_{or}}$	~~dB~~	~~-1~~
$\frac{\mathrm{DPCH\_Ec}}{\mathrm{I_{or}}}$	~~dB~~	~~-7~~
~~$\hat{I}_{or}$~~	~~dBm/3.84 MHz~~	~~-110~~

Table 12: Test parameters for reference sensitivity

Parameter	**Unit**	**Level**
DPCH_Ec	dBm/3.84 MHz	-117
$\hat{I}_{or}$	dBm/3.84 MHz	-106.7

7.4 Maximum input level

This is defined as the maximum receiver input power at the UE antenna port, which does not degrade the specified BER performance.

7.4.1 Minimum requirement

The BER shall not exceed 0.001 for the parameters specified in Table 13

~~**Table 13: Maximum input level**~~

~~**Parameter**~~	~~**Unit**~~	~~**Level**~~
$\frac{PCCPCH\_Ec}{I_{or}}$	~~dB~~	~~-10~~
$\frac{DPCH\_Ec}{I_{or}}$	~~dB~~	~~-19~~
$\frac{\mathrm{OCNS\_Ec}}{\mathrm{I_{or}}}$	~~dB~~	~~-0.52~~
~~$\hat{I}_{or}$~~	~~dBm/3.84 MHz~~	~~-25~~

Table 13: Maximum input level

Parameter	**Unit**	**Level**
$\frac{DPCH\_Ec}{I_{or}}$	dB	-19
$\hat{I}_{or}$	dBm/3.84 MHz	-25

Note

1. Since the spreading factor is large (10log(SF)=21dB), the majority of the total input signal consists of the OCNS interference.

7.5 Adjacent Channel Selectivity (ACS)

Adjacent Channel Selectivity (ACS) is a measure of a receiver's ability to receive a W-CDMA signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the center frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

7.5.1 Minimum requirement

The ACS shall be better than the value indicated in Table 14a for the test parameters specified in Table 14b where the BER shall not exceed 0.001

Table 14a: Adjacent Channel Selectivity

Power Class	**Unit**	**ACS**
4	dB	33

~~**Table 14b: Test parameters for Adjacent Channel Selectivity**~~

~~**Parameter**~~	~~**Unit**~~	~~**Level**~~
~~$\frac{PCCPCH\_Ec}{I_{or}}$~~	~~dB~~	~~-0.46~~
~~$\frac{DPCH\_Ec}{I_{or}}$~~	~~dB~~	~~-10~~
~~$\hat{I}_{or}$~~	~~dBm/3.84 MHz~~	~~-93~~
~~I_{oac}~~	~~dBm/3.84 MHz~~	~~-52~~
~~F_{uw} (modulated)~~	~~MHz~~	~~+5 or -5~~

Table 14b: Test parameters for Adjacent Channel Selectivity

Parameter	**Unit**	**Level**
DPCH_Ec	dBm/3.84 MHz	-103
$\hat{I}_{or}$	dBm/3.84 MHz	-92.7
I_{oac}	dBm/3.84 MHz	-52
F_{uw} (modulated)	MHz	+5 or -5

7.6 Blocking characteristics

The blocking characteristic is a measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels, without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit. The blocking performance shall apply at all frequencies except those at which a spurious response occur.

7.6.1 Minimum requirement

The BER shall not exceed 0.001 for the parameters specified in Table 15 and Table 16. For Table 16 up to (24) exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1MHz step size

~~Table 15: In-band blocking~~

~~**Parameter**~~	~~**Unit**~~	~~**Offset**~~	~~**Offset**~~
~~$\frac{PCCPCH\_Ec}{I_{or}}$~~	~~dB~~	~~-1~~	~~-1~~
~~$\frac{DPCH\_Ec}{I_{or}}$~~	~~dB~~	~~-7~~	~~-7~~
~~$\hat{I}_{or}$~~	~~dBm/3.84 MHz~~	~~-107~~	~~-107~~
~~$I_{blocking}$ (modulated)~~	~~dBm/3.84 MHz~~	~~-56~~	~~-44~~
~~Blocking offset~~	~~MHz~~	~~10<|f-fo|<15~~	~~|f-fo|≥15~~

~~Table 16: Out of band blocking~~

~~**Parameter**~~	~~**Unit**~~	~~**Band 1**~~	~~**Band 2**~~	~~**Band 3**~~
~~$\frac{PCCPCH\_Ec}{I_{or}}$~~	~~dB~~	~~-1~~	~~-1~~	~~-1~~
~~$\frac{DPCH\_Ec}{I_{or}}$~~	~~dB~~	~~-7~~	~~-7~~	~~-7~~
~~$\hat{I}_{or}$~~	~~dBm/3.84 MHz~~	~~-107~~	~~-107~~	~~-107~~
~~$I_{blocking}$ (CW)~~	~~dBm~~	~~-44~~	~~-30~~	~~-15~~
~~Blocking offset~~	~~MHz~~	~~2050<f <2095~~ ~~2185<f <2230~~	~~2025 <f <2050~~ ~~2230 <f <2255~~	~~1< f <2025~~ ~~2255<f<12750~~

Table 15: In-band blocking

Parameter	**Unit**	**Offset**	**Offset**
DPCH_Ec	dBm/3.84 MHz	-114	-114
$\hat{I}_{or}$	dBm/3.84 MHz	-103.7	-103.7
$I_{blocking}$ (modulated)	dBm/3.84 MHz	-56	-44
Blocking offset	MHz	10<|f-fo|<15	|f-fo| ≥15

Table 16: Out of band blocking

Parameter	**Unit**	**Band 1**	**Band 2**	**Band 3**
DPCH_Ec	dBm/3.84 MHz	-114	-114	-114
$\hat{I}_{or}$	dBm/3.84 MHz	-103.7	-103.7	-103.7
$I_{blocking}$ (CW)	DBm	-44	-30	-15
Blocking offset	MHz	2050<f <2095 2185<f <2230	2025 <f <2050 2230 <f <2255	1< f <2025 2255<f<12750

Note

1. On frequency regions 2095 <f< 2110 MHz and 2170<f< 2185 MHz, the appropriate in-band blocking or adjacent channel selectivity in section 7.5.1 shall be applied.

7.7 Spurious response

Spurious response is a measure of the receiver's ability to receive a wanted signal on its assigned channel frequency without exceeding a given degradation due to the presence of an unwanted CW interfering signal at any other frequency at which a response is obtained i.e. for which the blocking limit is not met.

7.7.1 Minimum requirement

The BER shall not exceed 0.001 for the parameters specified in Table 17

~~**Table 17: Spurious Response**~~

~~**Parameter**~~	~~**Unit**~~	~~**Level**~~
$\frac{PCCPCH\_Ec}{I_{or}}$	~~dB~~	~~-1~~
$\frac{\mathrm{DPCH\_Ec}}{\mathrm{I_{or}}}$	~~dB~~	~~-7~~
~~$\hat{I}_{or}$~~	~~dBm/3.84 MHz~~	~~-107~~
~~$I_{blocking}$ (CW)~~	~~dBm~~	~~-44~~
~~Fcw~~	~~MHz~~	~~Spurious response frequencies~~

Table 17: Spurious Response

Parameter	**Unit**	**Level**
DPCH_Ec	dBm/3.84 MHz	-114
$\hat{I}_{or}$	dBm/3.84 MHz	-103.7
$I_{blocking}$ (CW)	dBm	-44
fcw	MHz	Spurious response frequencies

7.8 Intermodulation characteristics

Third and higher order mixing of the two interfering RF signals can produce an interfering signal in the band of the desired channel. Intermodulation response rejection is a measure of the capability of the receiver to receiver a wanted signal on its assigned channel frequency in the presence of two or more interfering signals which have a specific frequency relationship to the wanted signal.

7.8.1 Minimum requirement

The BER shall not exceed 0.001 for the parameters specified in Table 18.

~~**Table 18: Receive intermodulation characteristics**~~

~~**Parameter**~~	~~**Unit**~~	~~**Level**~~
$\frac{PCCPCH\_Ec}{I_{or}}$	~~dB~~	~~-1~~
$\frac{\mathrm{DPCH\_Ec}}{\mathrm{I_{or}}}$	~~dB~~	~~-7~~
~~$\hat{I}_{or}$~~	~~dBm/3.84 MHz~~	~~-107~~
~~I_{ouw1}~~	~~dBm~~	~~-46~~
~~I_{ouw2}~~	~~dBm/3.84 MHz~~	~~-46~~

~~Fuw1 (CW)~~	~~MHz~~	~~10~~
~~Fuw2 (Modulated)~~	~~MHz~~	~~20~~

Table 18: Receive intermodulation characteristics

Parameter	**Unit**	**Level**
DPCH_Ec	dBm/3.84 MHz	-114
$\hat{I}_{or}$	dBm/3.84 MHz	-103.7
I_{ouw1}	dBm	-46
I_{ouw2}	dBm/3.84 MHz	-46
Fuw1 (CW)	MHz	10
Fuw2 (Modulated)	MHz	20

C.3. During connection

Table C.3 and C4 describe~~s~~ the downlink Physical Channels that are transmitted during a connection i.e., when measurements are done. The offset between DPCH and SCH should be zero chips at base station meaning that SCH is overlapping with the first symbols in DPCH in the beginning of DPCH slot structure.

C.3.1 Measurement of Receiver Characteristics

This section is applicable for measurements on Receiver Characteristics (section 7), except paragraph 7.4, Maximum input level..

Table C.3. Downlink Physical Channels transmitted during a connection. [1]

Physical Channel	Power level
CPICH	CPICH_Ec/DPCH_Ec = 7 dB
PCCPCH	PCCPCH_Ec/DPCH_Ec = 5 dB
SCH	SCH_Ec/DPCH_Ec = 5 dB
PICH	PICH_Ec/DPCH_Ec = 2 dB
OCNS	Not applicable
DPCH	The power needed to meet the BER/BLER target

C.3.2. Measurement of Performance requirements

This section is applicable for measurements on performance requirements (section 8), including paragraph 7.4, Maximum input level.

Table C.4~~3~~. Downlink Physical Channels transmitted during a connection.[1]

Physical Channel	Power
CPICH	CPICH_Ec/Ior = -10 dB
PCCPCH	PCCPCH_Ec/Ior = -12 dB
SCH	PCCPCH_Ec/Ior = -12 dB
PICH	PICH_Ec/Ior = -15 dB
DPCH	The power needed to meet the BER/BLER target
OCNS	Necessary power so that total transmit power spectral density of BS (Ior) adds to one

1 Power levels are based on the assumption that multipath propagation conditions and noise source representing interference from other cells Ioc are turned on after the call set-up phase.

3GPP TSG-RAN WG4 meeting #8 ***Document***

Sophia Antipolis, France, 26th -29th of Oct. 1999

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25.101	**CR**	**004**	Current Version: 3.0.0
3G specification number ↑		*↑ CR number as allocated by 3G support team*	

For submision to TSG	RAN#6	for approval	X	*(only one box should*
list TSG meeting no. here ↑		for information		*be marked with an X)*

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

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

Source: TSG RAN WG4 **Date:** 29-10-'99

Subject: Power setting of PDCH while varying data rate

3G Work item: UTRA

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	X
D	Editorial modification	

Reason for change: The uplink power should change when the data rate is changed (change of TFC). Requirements for the power adjustment are incorporated, by modifying the DTX requirements.

Clauses affected: Section 6.5.3

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other 2G core specifications		→ List of CRs:
MS test specifications	X	→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

6.5.3 Change of TFC

A change of TFC (Transport Format Combination) in uplink means that the power in uplink varies according the change of data rate. DTX, where the DPDCH is turned off, is a special case of variable data rate, which is used to minimize the interference between UE(s) by reducing the UE transmit power when voice, user or control information is not present.

~~6.5.3 Transmit Discontinuous Transmission (DTX)~~

~~DTX is used to minimize the interference between UE(s) by reducing the UE transmit power when voice, user or control information is not present.~~

6.5.3.1 Minimum requirement

A change of output power is required when the TFC, and thereby the datarate, is changed. The ratio of the amplitude between the DPDCH codes and the DPCCH code will vary. The power step due to a change in TFC shall be calculated in the UE so that the power transmitted on the DPCCH shall be kept constant. The power step shall then be rounded to the closest integer dB value. The accuracy of the power step, given the step size is specified in Table 5.

Table 5: Transmitter power step tolerance

Power control step size (Up or down) ΔP [dB]	Transmitter power step tolerance [dB]
1	+/- 0.5 dB
2	+/- 1.0 dB
3	+/- 1.5 dB
4≤ΔP≤10	+/- 2 dB
11≤ΔP≤15	+/- 3 dB
16≤ΔP≤20	+/- 4 dB
21≤ΔP	+/- 6 dB

The transmit power levels versus time should meet the mask specified in figure 1. When power increases the power step should be performed before the frame boundary, when power decreases the power step should be performed after the frame boundary.

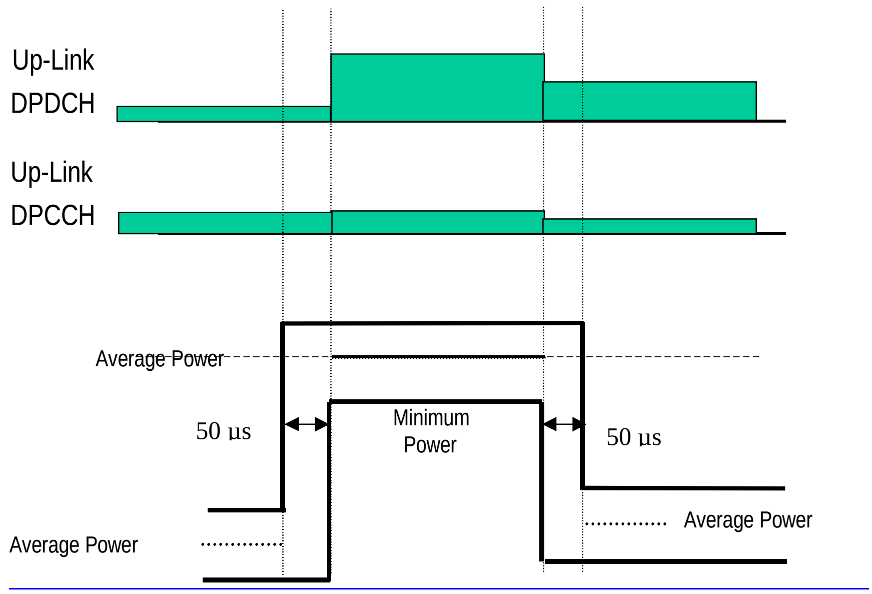


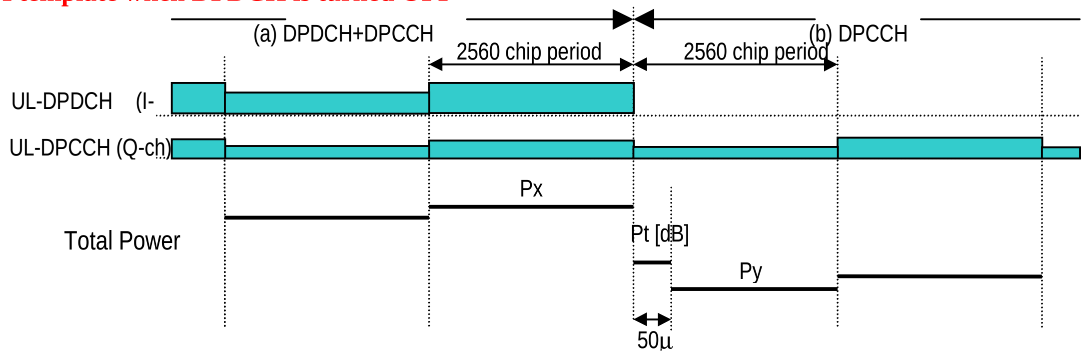
Figure 1 Transmit template during TFC Change.

~~The transmit DTX template is specified when Uplink Dedicated Physical Data Channel (DPDCH) is turned OFF and when the DPDCH is turned ON. With reference to the template specified when the DPDCH is turned OFF (a) and when the DPDCH is turned ON (b)~~

~~Note~~

~~1.Px [dB] and Py [dB] is the average power of 1 slot excluding the 50µs transient period~~
~~2.Pt [dB] is the average power during the period of the 50µs transient~~
~~3.Py - Px should be within ±2dB of the theoretical power change~~
~~4.Pt should be between Px and Py~~
~~5.* Theoretical power change is specified by the Gain factor β (see 25.213v x.y.z section 4.2.1)~~

~~(a)DTX template when DPDCH is turned OFF~~

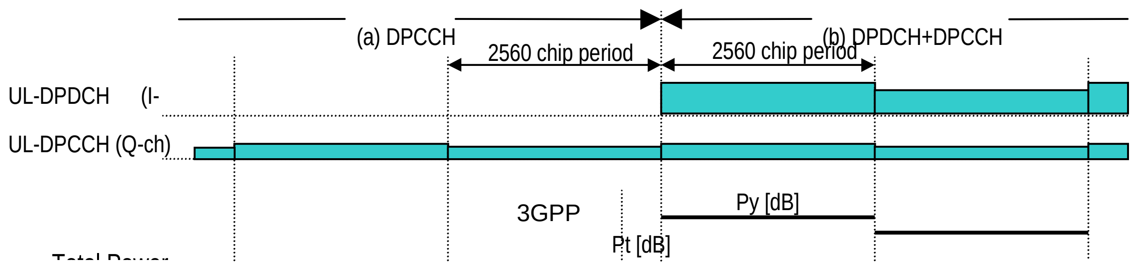


~~Figure 2a; Uplink Transmit DTX (DPDCH is turned OFF)~~

~~Table 6a: the values of Gain Factor β and theoretical power change~~

	~~(a) DPDCH+DPCCH~~	~~(b) DPCCH~~
~~DPDCH Gain~~	~~1~~	~~0~~
~~DPCCH Gain~~	~~0.5~~	~~0.5~~
~~Theoretical power change~~	~~-7 dB~~	

~~(b) DTX template when DPDCH is turned ON~~



~~**Figure 2b; Uplink Transmit DTX (DPDCH is turned ON)**~~

~~**Table 6b: the values of Gain Factor β and theoretical power change**~~

	~~(a) DPCCH~~	~~(b) DPDCH+DPCCH~~
~~DPDCH Gain~~	~~0~~	~~1~~
~~DPCCH Gain~~	~~0.5~~	~~0.5~~
~~Theoretical power change~~	~~7 dB~~	

3GPP TSG-RAN WG4 meeting #9
Bath, UK, 7-10 Dec. 1999

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25.101	**CR**	**001r2**	Current Version:	3.0.0
3G specification number ↑		*↑ CR number as allocated by 3G support team*		

For submission to TSG	RAN#6	for approval	X	*(only one box should*
list TSG meeting no. here ↑		for information		*be marked with an X)*

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

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

Source:	TSG RAN WG4
Date:	7-12-'99
Subject:	Correction of UE Measurement Channels Rev.2
3G Work item:	UTRA

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

F	Correction	X
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Reason for change: Number of bits in some Measurement channels were not consistent. Block size limits and appropriate rate matching need to be incorporated.
Rev. 2: Additional corrections in figures, figures now only for information, changes also for uplink.

Clauses affected: Section A

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other 2G core specifications		→ List of CRs:
MS test specifications	X	→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments: Note that all figures are modified, but they do not show any change bars.

Annex A (normative): Measurement channels

A.1 General

The measurement channels in this annex are defined to derive the requirements in section 6,7 and 8. The measurement channels represent example configurations of radio access bearers for different data rates.

The measurement channel for 12.2 kbps shall be supported by any UE both in up- and downlink. Support for other measurement channels is depending on the UE Radio Access capabilities.

A.2 UL reference measurement channel

A.2.1 UL reference measurement channel (12.2 kbps)

The parameters for the 12.2 kbps UL reference measurement channel are specified in Table A.1 and Table A.2. The channel coding for information is shown in figure A.1

Table A.1: UL reference measurement channel physical parameters (12.2 kbps)

Parameter	**Unit**	**Level**
Information bit rate	kbps	12.2
DPDCH	kbps	60
DPCCH	kbps	15
DPCCH/DPDCH	dB	-6
~~Power control~~	~~-~~	~~Off~~
TFCI	-	On
Repetition	%	23

Table A.2: UL reference measurement channel, transport channel parameters (12.2 kbps)

Parameters	**DCCH**	**DTCH**
Transport Channel Number	1 (TBD by WG2)	2 (TBD by WG2)
Transport Block Size	96	244
Transport Block Set Size	96	244
Transmission Time Interval	40 ms	20 ms
Type of Error Protection	Convolution Coding	Convolution Coding
Coding Rate	1/3	1/3
Static Rate Matching parameter	1.0	1.0
Size of CRC	16	16
Position of TrCH in radio frame	Fixed	fixed

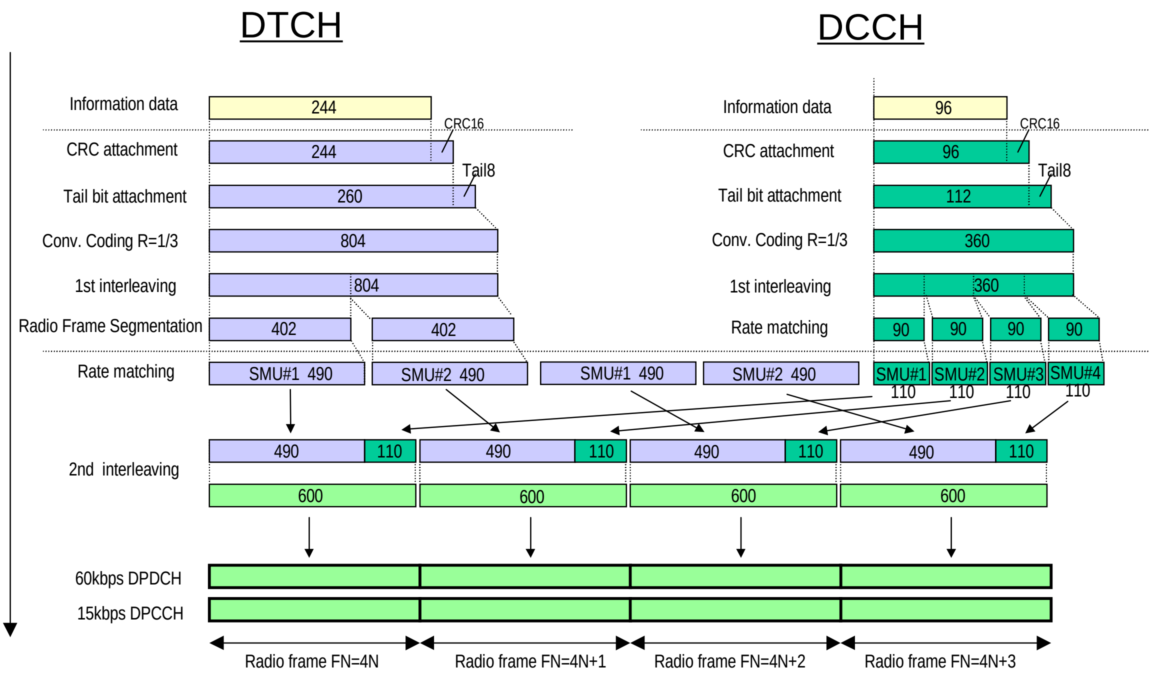

Figure A.1(Informative): Channel coding of UL reference measurement channel (12.2 kbps)

A.2.2 UL reference measurement channel (64 kbps)

The parameters for the 64 kbps UL reference measurement channel are specified in Table A.3 and Table A.4. The channel coding for information is shown in figure A.2. This measurement channel is not currently used in TS25.101 but can be used for future requirements.

Table A.3: UL reference measurement channel (64 kbps)

Parameter	**Unit**	**Level**
Information bit rate	kbps	64
DPDCH	kbps	240
DPCCH	kbps	15
DPCCH/DPDCH	dB	-9
~~Power control~~	~~-~~	~~Off~~
TFCI	-	On
Repetition	%	18

Table A.4: UL reference measurement channel, transport channel parameters (64kbps)

Parameter	**DCCH**	**DTCH**
Transport Channel Number	1 (TBD by WG2)	2 (TBD by WG2)
Transport Block Size	96	1280
Transport Block Set Size	96	1280
Transmission Time Interval	40 ms	20 ms

Type of Error Protection	Convolution Coding	Turbo Coding
Coding Rate	1/3	1/3
Static Rate Matching parameter	1.0	1.0
Size of CRC	16	16
Position of TrCH in radio frame	Fixed	Fixed

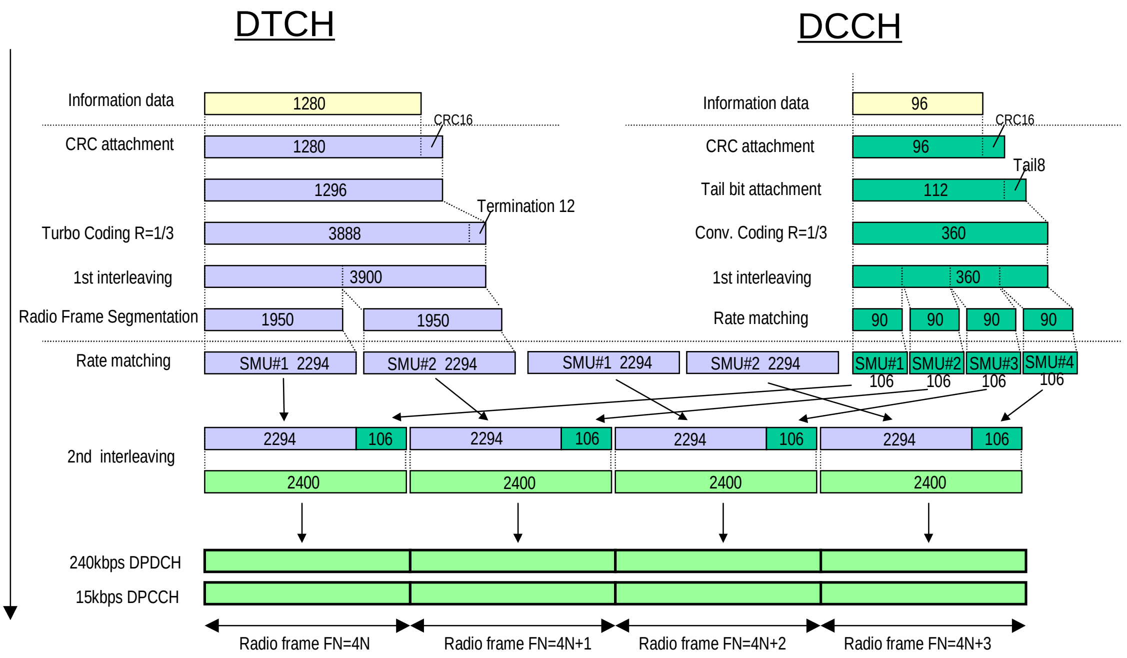

Figure A.2 (Informative): Channel coding of UL reference measurement channel (64 kbps)

A.2.3 UL reference measurement channel (144 kbps)

The parameters for the 144 kbps UL reference measurement channel are specified in Table A.5 and Table A.6. The channel coding for information is shown in Figure A.3. This measurement channel is not currently used in TS25.101 but can be used for future requirements.

Table A.5: UL reference measurement channel (144 kbps)

Parameter	Unit	Level
Information bit rate	kbps	144
DPDCH	kbps	480
DPCCH	kbps	15
DPCCH/DPDCH	dB	-12
~~Power control~~	~~-~~	~~Off~~
TFCI	-	On
Repetition	%	8

Table A.6: UL reference measurement channel, transport channel parameters (144kbps)

Parameters	DCCH	DTCH
Transport Channel Number	1 (TBD by WG2)	2 (TBD by WG2)
Transport Block Size	96	2880
Transport Block Set Size	96	2880
Transmission Time Interval	40 ms	20 ms
Type of Error Protection	Convolution Coding	Turbo Coding
Coding Rate	1/3	1/3
Static Rate Matching parameter	1.0	1.0
Size of CRC	16	16
Position of TrCH in radio frame	Fixed	Fixed

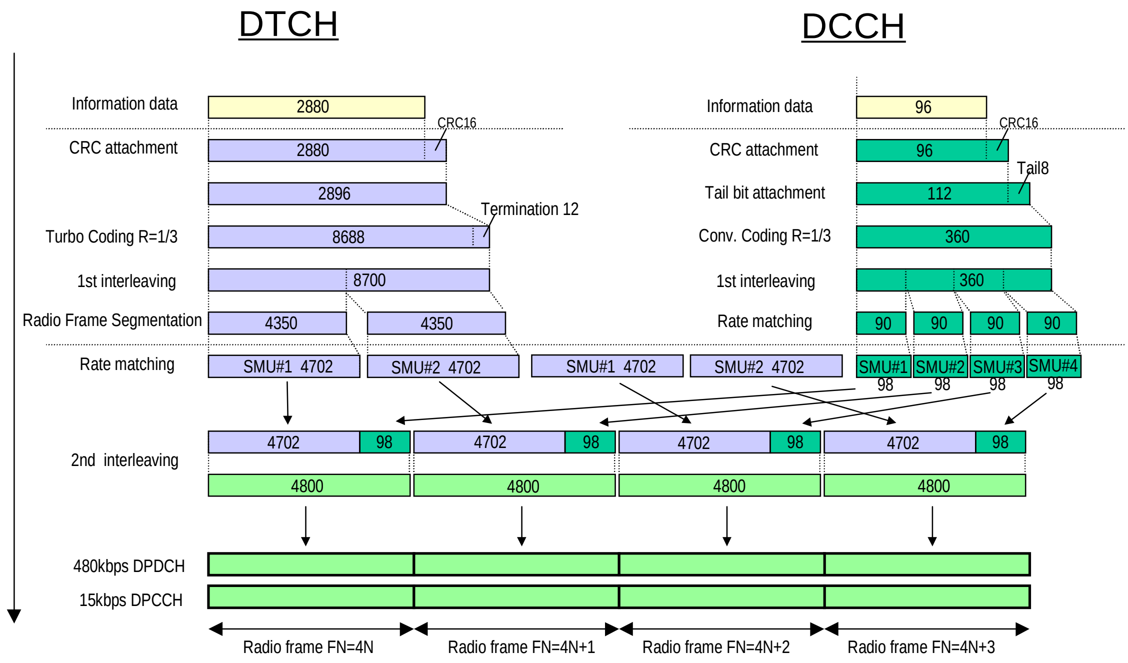

Figure A.3(Informative): Channel coding of UL reference measurement channel (144 kbps)

A.2.4 UL reference measurement channel (384 kbps)

The parameters for the 384 kbps UL reference measurement channel are specified in Table A.7and Table A.8 The channel coding for information is shown in Figure A.4 . This measurement channel is not currently used in TS25.101 but can be used for future requirements.

Table A.7: UL reference measurement channel (384 kbps)

Parameter	**Unit**	**Level**
Information bit rate	kbps	384
DPDCH	kbps	960
DPCCH	kbps	15
DPCCH/DPDCH	dB	-12
~~Power control~~	~~-~~	~~Off~~
TFCI	-	On
Puncturing	%	18

Table A.8: UL reference measurement channel, transport channel parameters (384 kbps)

Parameter	DCCH	DTCH
Transport Channel Number	1 (TBD by WG2)	2 (TBD by WG2)
Transport Block Size	96	~~7680~~3840
Transport Block Set Size	96	7680
Transmission Time Interval	40 ms	20 ms
Type of Error Protection	Convolution Coding	Turbo Coding
Coding Rate	1/3	1/3
Static Rate Matching parameter	1.0	1.0
Size of CRC	16	16
Position of TrCH in radio frame	Fixed	Fixed

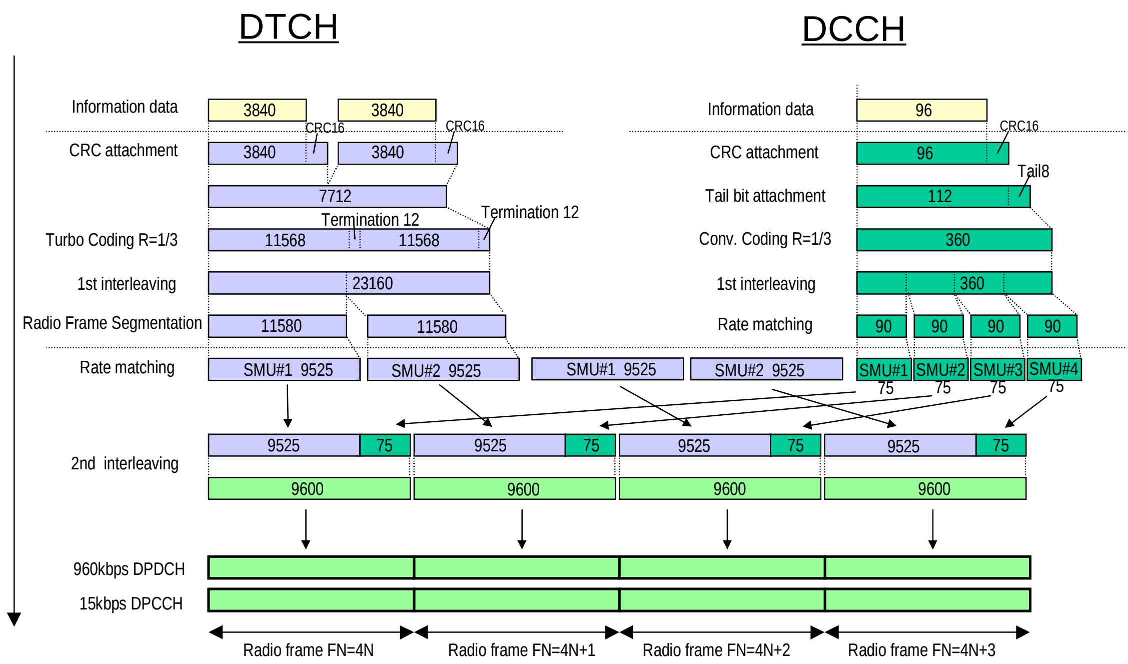

Figure A.4(Informative): Channel coding of UL reference measurement channel (384 kbps)

A.3 DL reference measurement channel

A.3.1 DL reference measurement channel (12.2 kbps)

The parameters for the 12.2 Kbps DL reference measurement channel are specified in Table A. 9 and Table A.10. The channel coding is shown for information in figure A.5

Table A.9: DL reference measurement channel physical parameters (12.2 kbps)

Parameter	Unit	**Level**
Information bit rate	kbps	12.2
DPCH	ksps	30
~~Power control~~	~~-~~	~~Off~~
TFCI	-	On
Puncturing	%	14.5

Table A.10: DL reference measurement channel, transport channel parameters (12.2 kbps)

Parameter	**DCCH**	**DTCH**
Transport Channel Number	1 (TBD by WG2)	2 (TBD by WG2)
Transport Block Size	96	244
Transport Block Set Size	96	244
Transmission Time Interval	40 ms	20 ms
Type of Error Protection	Convolution Coding	Convolution Coding
Coding Rate	1/3	1/3
Static Rate Matching parameter	1.0	1.0
Size of CRC	16	16
Position of TrCH in radio frame	fixed	fixed

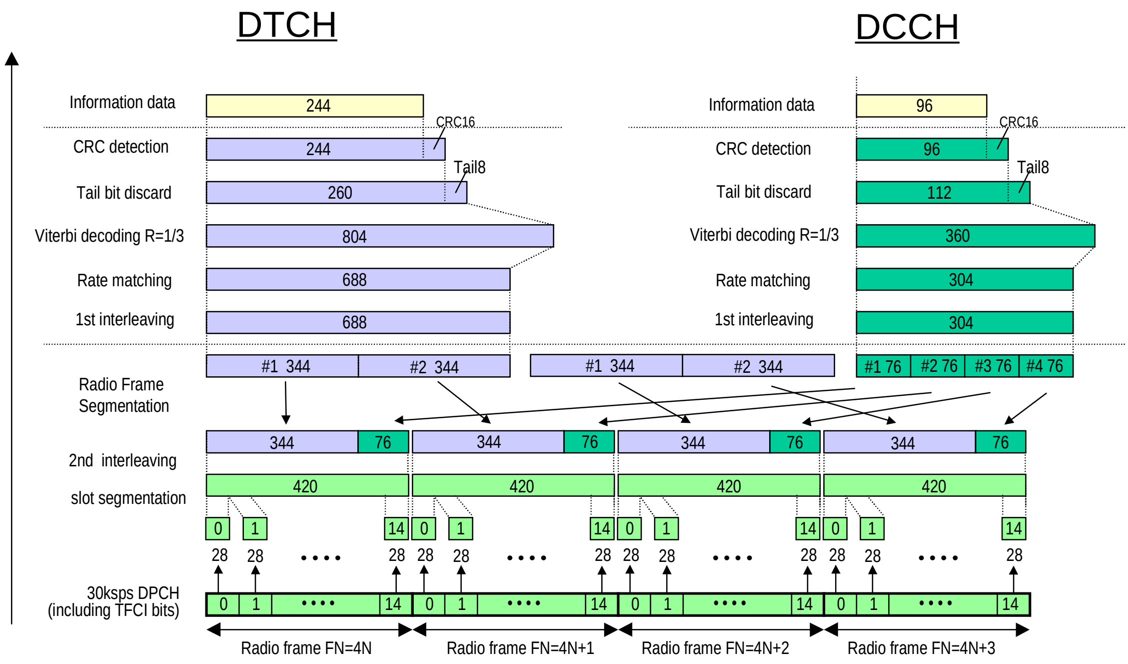

Figure A.5(Informative): Channel coding of DL reference measurement channel (12.2 kbps)

A.3.2 DL reference measurement channel (64 kbps)

The parameters for the DL reference measurement channel for 64 kbps are specified in Table A.11 and Table A.12. The channel coding is shown for information in Figure A.6

Table A.11: DL reference measurement channel physical parameters (64 kbps)

Parameter	Unit	Level
Information bit rate	kbps	64
DPCH	ksps	120
~~Power control~~	~~-~~	~~Off~~
TFCI	-	On
Repetition	%	2.9

Table A.12: DL reference measurement channel, transport channel parameters (64 kbps)

Parameter	DCCH	DTCH
Transport Channel Number	1 (TBD by WG2)	2 (TBD by WG2)
Transport Block Size	96	1280
Transport Block Set Size	96	1280
Transmission Time Interval	40 ms	20 ms
Type of Error Protection	Convolution Coding	Turbo Coding
Coding Rate	1/3	1/3
Static Rate Matching parameter	1.0	1.0
Size of CRC	16	16
Position of TrCH in radio frame	fixed	fixed

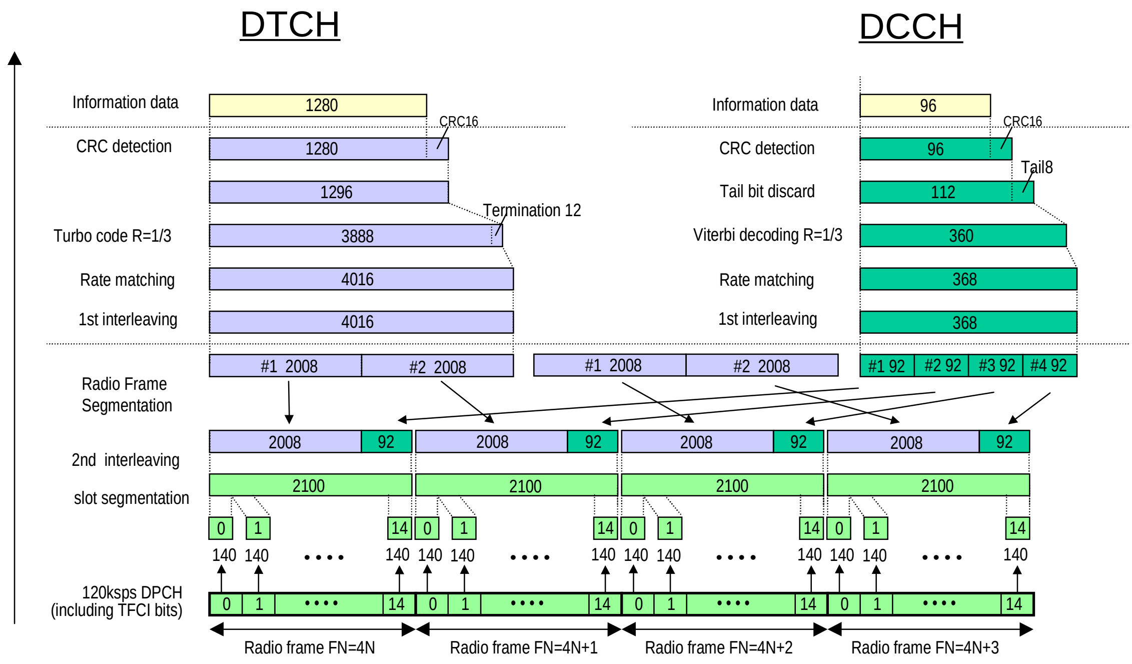

Figure A.6(Informative): Channel coding of DL reference measurement channel (64 kbps)

A.3.3 DL reference measurement channel (144 kbps)

The parameters for the DL measurement channel for 144 kbps are specified in Table A.13 and Table A.14. The channel coding is shown for information in Figure A.7

Table A.13: DL reference measurement channel physical parameters (144 kbps)

Parameter	Unit	Level
Information bit rate	kbps	144
DPCH	ksps	240
~~Power control~~	~~-~~	~~Off~~
TFCI	-	On
Puncturing	%	2.7

Table A.14: DL reference measurement channel, transport channel parameters (144 kbps)

Parameter	DCCH	DTCH
Transport Channel Number	1 (TBD by WG2)	2 (TBD by WG2)
Transport Block Size	96	2880
Transport Block Set Size	96	2880
Transmission Time Interval	40 ms	20 ms
Type of Error Protection	Convolution Coding	Turbo Coding
Coding Rate	1/3	1/3
Static Rate Matching parameter	1.0	1.0
Size of CRC	16	16
Position of TrCH in radio frame	fixed	fixed

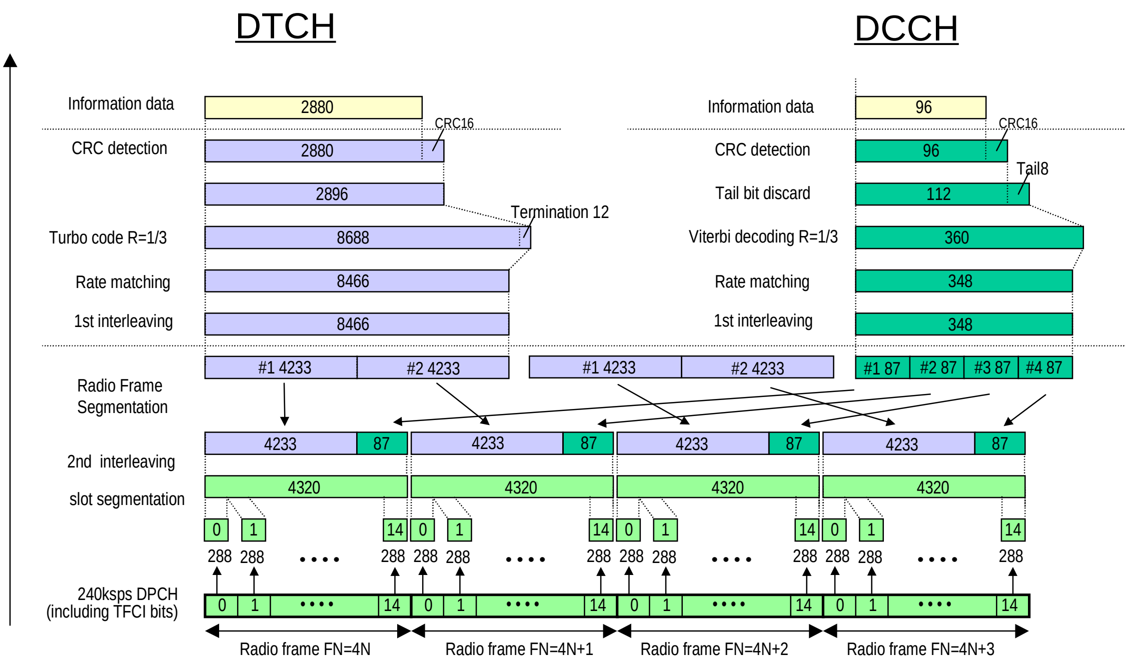

Figure A.7(Informative): Channel coding of DL reference measurement channel (144 kbps)

A.3.4 DL reference measurement channel (384 kbps)

The parameters for the DL measurement channel for 384 kbps are specified in Table A.15 and Table A.16. The channel coding is shown for information in Figure A.8

Table A.15: DL reference measurement channel, physical parameters (384 kbps)

Parameter	**Unit**	**Level**
Information bit rate	kbps	384
DPCH	ksps	480
~~Power control~~		~~Off~~
TFCI		On
Puncturing	%	22

Table A.16: DL reference measurement channel, transport channel parameters (384 kbps)

Parameter	**DCCH**	**DTCH**
Transport Channel Number	1 (TBD by WG2)	2 (TBD by WG2)
Transport Block Size	96	~~7680~~3840
Transport Block Set Size	96	7680
Transmission Time Interval	40 ms	20 ms
Type of Error Protection	Convolution Coding	Turbo Coding
Coding Rate	1/3	1/3
Static Rate Matching parameter	1.0	1.0
Size of CRC	16	16
Position of TrCH in radio frame	fixed	fixed

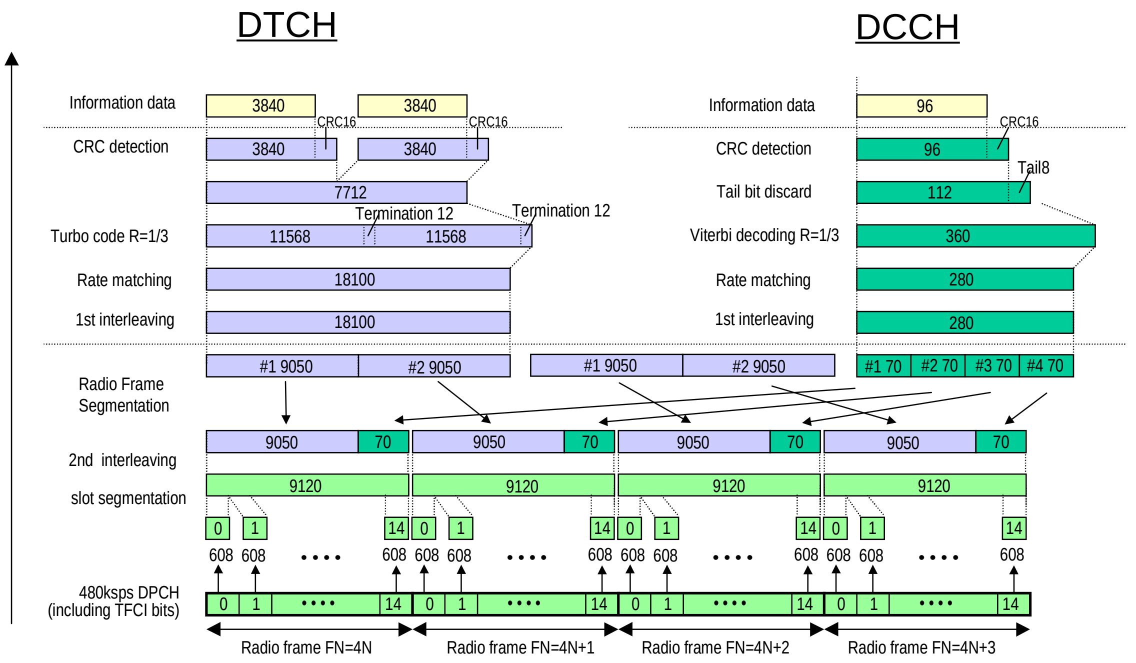

Figure A.8(Informative): Channel coding of DL reference measurement channel (384 kbps)

3GPP TSG RAN WG4 Meeting #9
Bath UK, 7-10 October 1999

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or for SMG, use the format P-99-xxx

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25.101	**CR**	**006**	Current Version:	3.0.0

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

For submission to:	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	Core Network	

Source: Motorola — **Date:** 3/12/99

Subject: Corrections to Annex C Down link Physical Channels.

Work item: UTRA

Category:				**Release:**		
(only one category shall be marked with an X)	F	Correction	X		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	
					Release 00	

Reason for change:

Changes to Annex C (Normative):Downlink Physical Channels arising from ;

1. The definition and terminology for the Downlink Physical channel need to be aligned with the modified performance requirements specified in Section 7 (Rx characteristics)
2. New definitions need to be specified for the open and closed loop Diversity case.
3. Editorial corrections are also required for SCH channel power definition

Clauses affected: Section 7 and Section 8 connection set-up parameters.

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

Other comments:

Annex C (normative): Downlink Physical Channels

C.1 General

This Normative annex specifies the downlink physical channels that are needed for setting a connection and channels that are needed during a connection.

C.2 Connection Set-up

Table C.2 describes the downlink Physical Channels that are required for connection set up.

Table C.2. Downlink Physical Channels required for connection set-up

Physical Channel
CPICH
PCCPCH
SCH
SCCPCH
PICH
AICH
DPCH

C.3. During connection

~~Table C.3~~The following clauses describes the downlink Physical Channels that are transmitted during a connection i.e., when measurements are done. For these measurement t~~T~~he offset between DPCH and SCH shall ~~should~~ be zero chips at base station meaning that SCH is overlapping with the first symbols in DPCH in the beginning of DPCH slot structure.

C.3.1 Measurement of Rx Characteristics

Table C.3.1 is applicable for measurements on the Receiver Characteristics (Section 7) with the exception of clause 7.4 (Maximum input level)

Table C.3.1. Downlink Physical Channels transmitted during a connection.

Physical Channel	**Power**
CPICH	CPICH_Ec / DPCH_Ec = 7 dB
PCCPCH	PCCPCH_Ec / DPCH_Ec = 5 dB
SCH	SCH_Ec / DPCH_Ec = 5 dB
PICH	PICH_Ec / DPCH_Ec = 2 dB
DPCH	Test dependent power ~~The power needed to meet the BER/BLER target~~

C.3.2 Measurement of Performance requirements

Table C.3.2 is applicable for measurements on the Performance requirements(Section 8), including clause 7.4 (Maximum input level)

Table C.3.2 Downlink Physical Channels transmitted during a connection.[1]

Physical Channel	Power	Note
CPICH	CPICH_Ec/Ior = -10 dB	
PCCPCH	PCCPCH_Ec/Ior = -12 dB	
SCH	~~PCCPCH~~ SCH_Ec/Ior = -12 dB	*This power shall be divided equally between Primary and Secondary Synchronous channels*
PICH	PICH_Ec/Ior = -15 dB	
DPCH	Test dependent power ~~The power needed to meet the BER/BLER target~~	
OCNS	Necessary power so that total transmit power spectral density of BS (Ior) adds to one	

C.3.3 Connection with open-loop transmit diversity mode

Table C.3.3 is applicable for measurements for clause 8.6.1(Demodulation of DCH in open loop transmit diversity mode

Table C3.3. Downlink Physical Channels transmitted during a connection.[1]

Physical Channel	Power	Note

[1] Power levels are based on the assumption that multipath propagation conditions and noise source representing interference from other cells Ioc are turned on after the call set-up phase.

CPICH (antenna 1)	CPICH_Ec1/Ior = -13 dB	1. *Total CPICH_Ec/Ior = -10 dB*
CPICH (antenna 2)	CPICH_Ec2/Ior = -13 dB	
PCCPCH (antenna 1)	PCCPCH_Ec1/Ior = -15 dB	1. *STTD applied* 2. *Total PCCPCH_Ec/Ior = -12 dB*
PCCPCH (antenna 2)	PCCPCH_Ec2/Ior = -15 dB	
SCH (antenna 1 / 2)	SCH_Ec/Ior = -12 dB	1. *TSTD applied.* 2. *This power shall be divided equally between Primary and Secondary Synchronous channels*
PICH (antenna 1)	PICH_Ec1/Ior = -18 dB	1. STTD applied 2. Total PICH_Ec/Ior = -15 dB
PICH (antenna 2)	PICH_Ec2/Ior = -18 dB	
DPCH	Test dependent power ~~Total power from both antennas~~	1. STTD applied 2. Total power from both antennas
OCNS	Necessary power so that total transmit power spectral density of BS (Ior) adds to one	1. This power shall be divided equally between antennas

C.3.4 Connection with closed loop transmit diversity mode

Table C.3.4 is applicable for measurements for clause 8.6.2(Demodulation of DCH in closed loop transmit diversity mode)

Table C.3.4. Downlink Physical Channels transmitted during a connection.[1]

Physical Channel	**Power**	**Note**
CPICH (antenna 1)	CPICH_Ec1/Ior = -13 dB	1. Total CPICH_Ec/Ior = -10 dB
CPICH (antenna 2)	CPICH_Ec2/Ior = -13 dB	
PCCPCH (antenna 1)	PCCPCH_Ec1/Ior = -15 dB	1. STTD applied
PCCPCH (antenna 2)	PCCPCH_Ec2/Ior = -15 dB	1. STTD applied, total PCCPCH_Ec/Ior = -12 dB
SCH (antenna 1 / 2)	SCH_Ec/Ior = -12 dB	1. TSTD applied
PICH (antenna 1)	PICH_Ec1/Ior = -18 dB	1. STTD applied 2. STTD applied, total PICH_Ec/Ior = -15 dB
PICH (antenna 2)	PICH_Ec2/Ior = -18 dB	
DPCH	Test dependent power ~~Total power from both antennas~~	1. Total power from both antennas
OCNS	Necessary power so that total transmit power spectral density of BS (Ior) adds to one	1. This power shall be divided equally between antennas

3GPP TSG-RAN WG4 meeting #9
Bath, U.K., 7th -10th of Dec. 1999

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25.101	**CR**	**007**	Current Version:	3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG	RAN#6	for approval	X	*(only one box should*
list TSG meeting no. here ↑		for information		*be marked with an X)*

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

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

Source:	TSG RAN WG4	**Date:**	
Subject:	Proposal for ACLR/ACS specifications for class 3		
3G Work item:	UTRA		

Category:			
	F	Correction	X
	A	Corresponds to a correction in a 2G specification	
(only one category shall be marked with an X)	B	Addition of feature	
	C	Functional modification of feature	
	D	Editorial modification	

Reason for change: In the current version of 25.101 (v3.0.0), there are no minimum requirement values of ACLR and ACS for class 3 (24dBm). Therefore we propose to decide ACLR/ ACS values for class 3. The ACLR/ACS specification values for class 3 should be same as the values for class 4.

Clauses affected: Section 6.6.2.2 and 7.5

Other specs affected:			
	Other 3G core specifications		→ List of CRs:
	Other 2G core specifications		→ List of CRs:
	MS test specifications	X	→ List of CRs:
	BSS test specifications		→ List of CRs:
	O&M specifications		→ List of CRs:

Other comments:

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the transmitted power to the power measured after a receiver filter in the adjacent channel(s). Both the transmitted power and the received power are measured with a filter that has a Root-Raised Cosine (RRC) filter response with roll-off α =0.22 and a bandwidth equal to the chip rate.

6.6.2.2.1 Minimum requirement

The ACLR shall be better than the value specified in Table 8

Table 8:UE ACLR

Power Class	UE channel	ACLR limit
3	+ 5 MHz or – 5 MHz	33 dB or –50 dBm which ever is higher
3	+ 10 MHz or –10 MHz	43 dB or –50 dBm which ever is higher
4	+ 5 MHz or – 5 MHz	33 dB or –50 dBm which ever is higher
4	+ 10 MHz or –10 MHz	43 dB or –50 dBm which ever is higher

Note

1. The ACLR due to switching transients shall not exceed the limits in Table 8.
2. The ACLR requirements reflect what can be achieved with present state of the art technology.
3. Requirement on the UE shall be reconsidered when the state of the art technology progresses.

7.5 Adjacent Channel Selectivity (ACS)

Adjacent Channel Selectivity (ACS) is a measure of a receiver's ability to receive a W-CDMA signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the center frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

7.5.1 Minimum requirement

The ACS shall be better than the value indicated in Table 14a for the test parameters specified in Table 14b where the BER shall not exceed 0.001

Table 14a: Adjacent Channel Selectivity

Power Class	Unit	ACS
3	dB	33
4	dB	33

Table 14b: Test parameters for Adjacent Channel Selectivity

Parameter	Unit	Level
$\frac{PCCPCH\_Ec}{I_{or}}$	dB	-0.46
$\frac{DPCH\_Ec}{I_{or}}$	dB	-10
$\hat{I}_{or}$	dBm/3.84 MHz	-93
I_{oac}	dBm/3.84 MHz	-52
F_{uw} (modulated)	MHz	+5 or -5

3GPP TSG-4 meeting #9
Bath, UK, 7-10 Dec. 1999

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25.101 CR 009 Current Version: 3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

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Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM [ ] ME [X] UTRAN [ ] Core Network [ ]
(at least one should be marked with an X)

Source: RAN WG4 **Date:** 10-12-99

Subject: Clarification of Uplink inner loop power control requirements

3G Work item: UTRA

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	X
D	Editorial modification	

Reason for change: Clarification of requirements to include softhandover, several algorithms for processing power control commands and compressed mode.

Clauses affected: 6.4.2

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other 2G core specifications		→ List of CRs:
MS test specifications	X	→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

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6.4.1 Open loop power control

Open loop power control is the ability of the UE transmitter to sets its output power to a specific value. The UE open loop power control tolerance is given in Table 4

Table 4: Open loop power control

Normal conditions	± 9 dB
Extreme conditions	± 12 dB

6.4.2 Inner loop power control in the uplink

Inner loop power control in the uplink is the ability of the UE transmitter to adjust its output power in accordance with one or more~~the~~ TPC ~~symbols~~ commands received in the downlink~~.~~

6.4.2.1 Power control steps

The power control step is the ~~minimum step~~ change in the ~~UL~~UE transmitter output power in response to a ~~power control command~~single TPC command, TPC_cmd, derived at the UE.

6.4.2.1.1 Minimum requirement

The UE transmitter shall have the capability of ~~setting~~ changing the ~~inner loop~~ output power with a step size~~s~~ of 1, 2 and 3 dB according to the value of Δ_{TPC} or Δ_{RP-TPC}, in the slot immediately after the TPC_cmd can be derived.

(a) The ~~tolerance of the~~ transmitter output power step due to inner loop power control shall be within the range shown in Table 5.

(b) The ~~tolerance of the~~ transmitter average output power step due to inner loop power control shall be within the range shown in Table 6.

Table 5: Transmitter power control ~~tolerance~~ range

TPC_cmd ~~Power control commands in the forward links~~	Transmitter power control ~~tolerance~~range					
	1 dB step size		2 dB step size		3 dB step size	
	Lower	Upper	Lower	Upper	Lower	Upper
+1 ~~Up~~	+0.5 dB	+1.5 dB	+1 dB	+3 dB	+1.5 dB	+4.5 dB
0	-0.5 dB	+0.5 dB	-0.5 dB	+0.5 dB	-0.5 dB	+0.5 dB
-1 ~~Down~~	-0.5 dB	-1.5 dB	-1 dB	-3 dB	-1.5 dB	-4.5 dB

Table 6: Transmitter average power control ~~tolerance~~range

TPC_cmd ~~Power control commands in the forward links~~	Transmitter power control ~~tolerance~~ range after 10 equal ~~commands~~ TPC_cmd ~~(up or down)~~					
	1 dB step size		2 dB step size		3 dB step size	
	Lower	Upper	Lower	Upper	Lower	Upper
+1 ~~Up~~	+8 dB	+12 dB	+16 dB	+24 dB	+24 dB	+36 dB
0	-2 dB	+ 2 dB	-2 dB	+ 2 dB	-2 dB	+ 2 dB
-1 ~~Down~~	-8 dB	-12 dB	-16 dB	-24 dB	-24 dB	-36 dB

6.4.3 Minimum transmit output power

The minimum controlled output power of the UE is when the power control setting is set to a minimum value. This is when both the inner loop and open loop power control indicate a minimum transmit output power is required.

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25.101	**CR**	**011**	Current Version:	3.0.0
3G specification number ↑		*↑ CR number as allocated by 3G support team*		

For submision to TSG	RAN#6	for approval	X	*(only one box should*
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Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

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

Source:	TSG RAN WG4	**Date:**	9-12-'99
Subject:	Power setting of DPCH		
3G Work item:	UTRA		

Category:	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	X
with an X)	D	Editorial modification	

Reason for change: The uplink power should change when the data rate is changed (change of TFC) and when transmitting compressed frames.
Requirements for the power adjustment are incorporated, by modifying the DTX requirements.

Clauses affected: Section 6.5.3

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G core specifications		→ List of CRs:	
	MS test specifications	X	→ List of CRs:	
	BSS test specifications		→ List of CRs:	
	O&M specifications		→ List of CRs:	

Other comments:

6.5.3 Change of TFC

A change of TFC (Transport Format Combination) in uplink means that the power in uplink varies according the change of data rate. DTX, where the DPDCH is turned off, is a special case of variable data rate, which is used to minimize the interference between UE(s) by reducing the UE transmit power when voice, user or control information is not present.

~~6.5.3 Transmit Discontinuous Transmission (DTX)~~

~~DTX is used to minimize the interference between UE(s) by reducing the UE transmit power when voice, user or control information is not present.~~

6.5.3.1 Minimum requirement

A change of output power is required when the TFC, and thereby the datarate, is changed. The ratio of the amplitude between the DPDCH codes and the DPCCH code will vary. The power step due to a change in TFC shall be calculated in the UE so that the power transmitted on the DPCCH shall follow the inner loop power control. The power step shall then be rounded to the closest integer dB value. The accuracy of the power step, given the step size is specified in Table 5.

Table 5: Transmitter power step tolerance

Power control step size (Up or down) ΔP [dB]	Transmitter power step tolerance [dB]
1	+/- 0.5 dB
2	+/- 1.0 dB
3	+/- 1.5 dB
$4 \leq \Delta P \leq 10$	+/- 2 dB
$11 \leq \Delta P \leq 15$	+/- 3 dB
$16 \leq \Delta P \leq 20$	+/- 4 dB
$21 \leq \Delta P$	+/- 6 dB

The transmit power levels versus time should meet the mask specified in figure 1. When power increases the power step shall be performed before the frame boundary, when power decreases the power step shall be performed after the frame boundary.

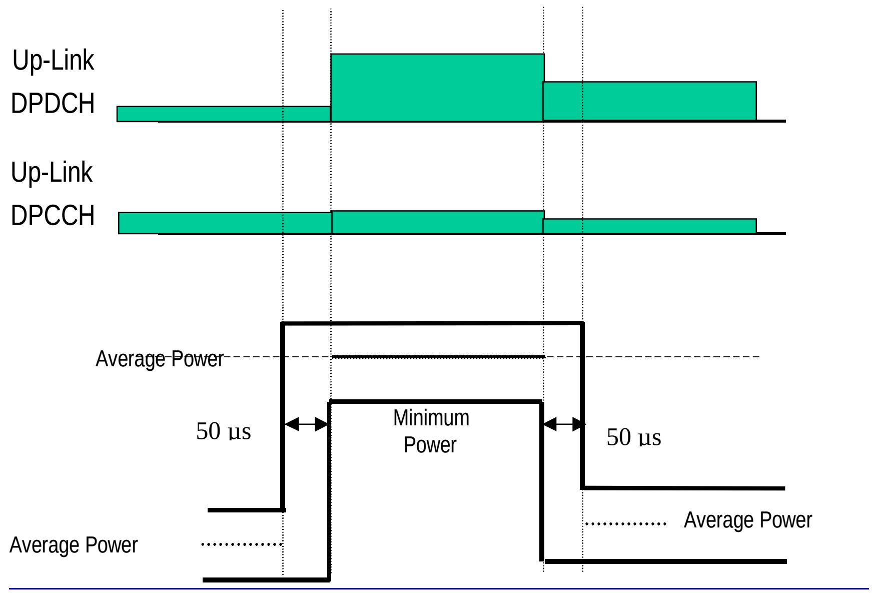


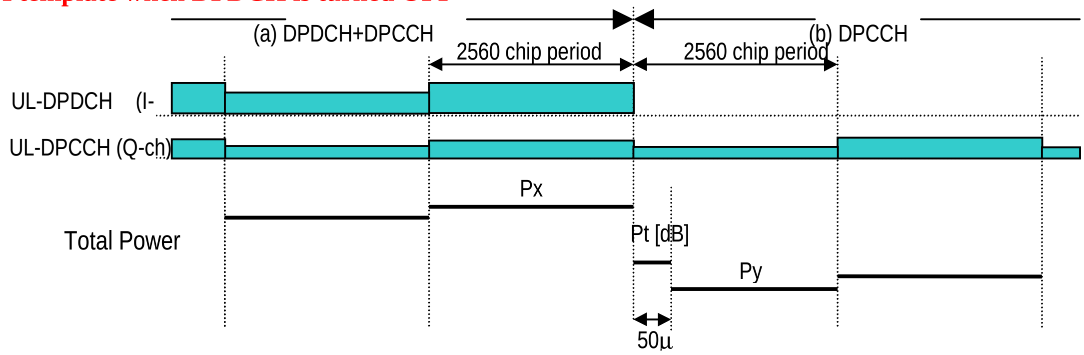
Figure 1 Transmit template during TFC Change.

~~The transmit DTX template is specified when Uplink Dedicated Physical Data Channel (DPDCH) is turned OFF and when the DPDCH is turned ON. With reference to the template specified when the DPDCH is turned OFF (a) and when the DPDCH is turned ON (b)~~

~~Note~~

~~1.Px [dB] and Py [dB] is the average power of 1 slot excluding the 50µs transient period~~
~~2.Pt [dB] is the average power during the period of the 50µs transient~~
~~3.Py - Px should be within ±2dB of the theoretical power change~~
~~4.Pt should be between Px and Py~~
~~5.* Theoretical power change is specified by the Gain factor β (see 25.213v x.y.z section 4.2.1)~~

~~(a)DTX template when DPDCH is turned OFF~~

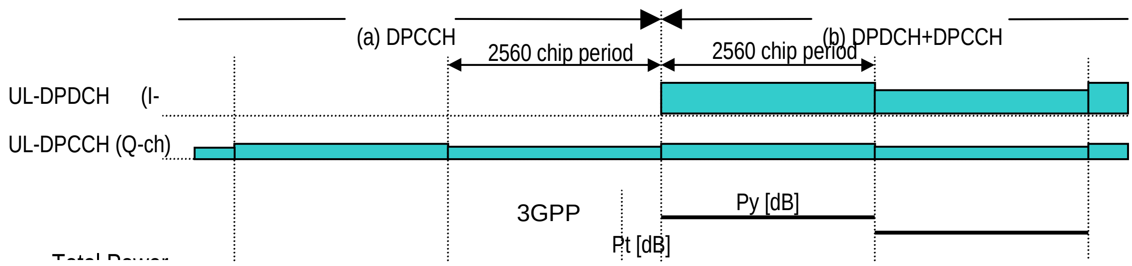


~~Figure 2a; Uplink Transmit DTX (DPDCH is turned OFF)~~

~~Table 6a: the values of Gain Factor β and theoretical power change~~

	~~(a) DPDCH+DPCCH~~	~~(b) DPCCH~~
~~DPDCH Gain~~	~~1~~	~~0~~
~~DPCCH Gain~~	~~0.5~~	~~0.5~~
~~Theoretical power change~~	~~-7 dB~~	

~~(b) DTX template when DPDCH is turned ON~~



~~**Figure 2b; Uplink Transmit DTX (DPDCH is turned ON)**~~

~~**Table 6b: the values of Gain Factor β and theoretical power change**~~

	~~(a) DPCCH~~	~~(b) DPDCH+DPCCH~~
~~DPDCH Gain~~	~~0~~	~~1~~
~~DPCCH Gain~~	~~0.5~~	~~0.5~~
~~Theoretical power change~~	~~7 dB~~	

6.5.4 Power setting in uplink compressed mode

Compressed mode in uplink means that the power in uplink is changed.

6.5.4.1 Minimum requirement

A change of output power is required during uplink compressed frames since the transmission of data is performed in a shorter interval. The ratio of the amplitude between the DPDCH codes and the DPCCH code will also vary. The power step due to compressed mode shall be calculated in the UE so that the energy transmitted on the pilot bits during each transmitted slot shall follow the inner loop power control. Thereby the power step during the transmitted part of a compressed frame shall be such that the power on the DPCCH follows the inner loop power control with an additional power offset during a compressed frame of $N_{pilot,N}$ / $N_{pilot,C}$ where $N_{pilot,C}$ is the number of pilot bits per slot when in compressed mode, and $N_{pilot,N}$ is the number of pilot bits per slot in normal mode.

The power step shall then be rounded to the closest integer dB value. The accuracy of the power step, given the step size is specified in Table 5 in paragraph 6.5.3.1.

The transmit power levels versus time shall meet the mask specified in figure 1. When power increases the power step shall be performed before the actual slot boundary, when power decreases the power step shall be performed after the actual slot boundary.

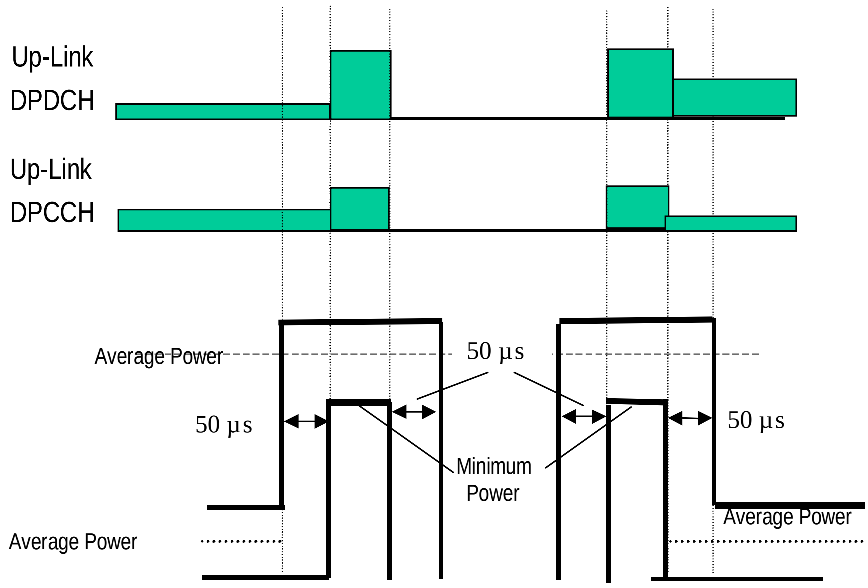


Figure 2 Transmit template during Compressed mode .

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25.101 CR 014 Current Version: 3.0.0

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

For submission to: TSG-RAN #6
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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 [ ] Core Network [ ]
(at least one should be marked with an X)

Source: BellSouth Cellular Corp **Date:** 1999-11-30

Subject: Update of ITU Region 2 Specific Specifications and proposed universal channel numbering.

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	
C	Functional modification of feature	X
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: Adds TX-RX frequency separation for Region 2, proposes new universal channel numbering scheme, and updates the rx blocking tables.

Clauses affected: 5.3, 5.4.3, 7.6.1

Other specs affected:

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

Other comments:

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5.2 Frequency bands

UTRA/FDD is designed to operate in either of the following paired bands;

(a)	1920 – 1980MHz:	Up-link (Mobile transmit, base receive)
	2110 – 2170MHz:	Down-link (Base transmit, mobile receive)
(b)*	1850 – 1910MHz:	Up-link (Mobile transmit, base receive)
	1930 – 1990MHz:	Down-link (Base transmit, mobile receive)

~~Note: Appropriate adjustment is required for the parameters in the specified band~~

* Used in Region 2

Additional allocations in ITU region 2 are FFS

Deployment in other frequency bands is not precluded.

5.3 TX–RX frequency separation

(a) The minimum transmit to receive frequency separation is 134.8 MHz and the maximum value is 245.2 MHz~~ when operating in the paired band defined in sub-clause 5.2 (a). All~~ and all UE(s) shall support a TX –RX frequency separation of 190 MHz when operating in the paired band defined in sub clause 5.2(a).

(b) When operating in the paired band defined in sub-clause 5.2(b), all UE(s) shall support a TX – RX frequency separation of 80 MHz.

(c) UTRA/FDD can support both fixed and variable transmit to receive frequency separation.

(d) The use of other transmit to receive frequency separations in existing or other frequency bands shall not be precluded~~.~~

5.4 Channel arrangement

5.4.1 Channel spacing

The nominal channel spacing is 5 MHz, but this can be adjusted to optimize performance in a particular deployment scenario.

5.4.2 Channel raster

The channel raster is 200 kHz, which means that the center frequency must be an integer multiple of 200 kHz.

5.4.3 Channel number

The carrier frequency is designated by the UTRA Absolute Radio Frequency Channel Number (UARFCN). The value of the UARFCN in the IMT2000 band is defined as follows;

Table 1: UTRA Absolute Radio Frequency Channel Number

Uplink	$N_u = 5 * (F_{uplink}$ ~~– 1885.2~~ MHz)	0.0 ~~1885.2~~ MHz ≤ F_{uplink} ≤ 3276.6 MHz ~~2024.8 MHz~~ where F_{uplink} is the uplink frequency in MHz
Downlink	$N_d = 5 * (F_{downlink}$ ~~– 2075.2~~ MHz)	0.0 ~~2110.2~~ MHz ≤ $F_{\sout{uplink}downlink}$ ≤3276.6 MHz ~~2199.8 MHz~~ where $F_{downlink}$ is the downlink frequency in MHz

7.6 Blocking characteristics

The blocking characteristic is a measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels, without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit. The blocking performance shall apply at all frequencies except those at which a spurious response occur.

7.6.1 Minimum requirement

The BER shall not exceed 0.001 for the parameters specified in Table 15 and Table 16. For Table 16 up to (24) exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1MHz step size

Table 15: In-band blocking

Parameter	Unit	Offset	Offset
$\frac{PCCPCH\_Ec}{I_{or}}$	dB	-1	-1
$\frac{\mathrm{DPCH\_Ec}}{\mathrm{I_{or}}}$	dB	-7	-7
$\hat{I}_{or}$	dBm/3.84 MHz	-107	-107
$I_{blocking}$ (modulated)	dBm/3.84 MHz	-56	-44
Blocking offset	MHz	10<|f-fo|<15	|f-fo| ≥15

Table 16: Out of band blocking

Parameter	Unit	Band 1	Band 2	Band 3
$\frac{PCCPCH\_Ec}{I_{or}}$	dB	-1	-1	-1
$\frac{\mathrm{DPCH\_Ec}}{\mathrm{I_{or}}}$	dB	-7	-7	-7
$\hat{I}_{or}$	dBm/3.84 MHz	-107	-107	-107
$I_{blocking}$ (CW)	dBm	-44	-30	-15
~~Blocking offset~~ F_{uw} For operation in frequency bands as defined in sub-clause 5.2(a)	MHz	2050<f <2095 2185<f <2230	2025 <f <2050 2230 <f <2255	1< f <2025 2255<f<12750
F_{uw} For operation in frequency bands as defined in sub-clause 5.2(b)	MHz	1870 <f<1915 2005 <f<2050	1845 <f < 1870 2050 < f <2075	1 < f < 1845 2075 <f < 12750

Note:

1. ~~On frequency regions~~ For operation in bands referenced in 5.2(a), from 2095 <f< 2110 MHz and 2170<f< 2185 MHz, the appropriate in-band blocking or adjacent channel selectivity in section 7.5.1 shall be applied~~.~~

2. For operation in bands referenced in 5.2(b), from 1915 <f< 1930 MHz and 1990 <f< 2005 MHz, the appropriate in-band blocking or adjacent channel selectivity in section 7.5.1 shall be applied.

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Bath, UK, 7-10 December 1999

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25.101 CR 015 Current Version: 3.0.0

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

For submission to: RAN#6	for approval	X	strategic		(for SMG use only)
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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 [ ] Core Network [ ]
(at least one should be marked with an X)

Source: Fujitsu **Date:** 10/12/99

Subject: Performance requirements for demodulation of DCH in Site Selection Diversity Transmission mode for Section 8.6.3 of 25.101v3.0.0

Work item:

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

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

Reason for change: This contribution completes Table 39. As a consequence, Table 40 is redundant and therefore deleted.

Clauses affected:

Other specs Affected:

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

Other comments:

1. Text proposal for chapter 8.6.3

8.6.3 Demodulation of DCH in Site Selection Diversity Transmission mode

~~<Editor's note: This section may be moved to TS25.103.>~~

The bit error characteristics of UE receiver is determined in Site Selection Diversity Transmission (SSDT) mode. Two BS emulators are required for this performance test. The delay profiles of signals received from different base stations are assumed to be the same but time shifted by 10 chip periods (2604 ns).

8.6.3.1 Minimum Requirements

For the parameters specified in Table 39, the BLER shall not exceed the piece-wise linear BLER curve specified by the points in Table 41

Table 39: DCH parameters in multi-path propagation conditions during SSDT mode (Propagation condition: Case 1)

Parameter	Unit	Test 1	Test 2	Test 3	Test 4
$\frac{CPICH\_E_c}{I_{or}}$ (for Cell 1)	dB	-10	-13~~0~~	-10~~+delta~~	-10~~+delta~~
$\frac{CPICH\_E_c}{I_{or}}$ (for Cell 2)	dB	-10~~+delta~~	-10~~+delta~~	-10	-13~~0~~
$\frac{DPCH\_E_{c1}}{I_{or}} / \frac{DPCH\_E_{c2}}{I_{or}}$ ~~(Cell 1)~~*	dB	0	-3	0	+3
~~$\frac{DPCH\_E_c}{I_{or}}$ (Cell 2)*~~	~~dB~~				
$\hat{I}_{or1}/I_{oc}$ ~~and $\hat{I}_{or2}/I_{oc}$~~	dB	9	6	9	9
$\hat{I}_{or2}/I_{oc}$	dB	9	9	9	6
I_{oc}	dBm/3.84 MHz	-60			
Information Data Rate	kbps	12.2	12.2	12.2	12.2
~~$DCH\ E_b/N_t$~~	~~dB~~				
Number of FBI bits assigned to "S" Field		1	1	2	2
Code word Set		Long	Long	Short	Short

*Note: DPCH_Ec/Ior value applies whenever DPDCH in the cell is transmitted.

~~Where the 4 test modes are defined as follows:~~

~~**Table 40: Test mode parameter**~~

~~Test Mode~~	~~Delta (dB)~~	~~Number of FBI bits assigned to "S" Field~~	~~Cell ID Code word Set~~
~~Test 1~~	~~0~~	~~1~~	~~Long~~
~~Test 2~~	~~3~~	~~1~~	~~Long~~
~~Test 3~~	~~0~~	~~2~~	~~Short~~

~~Test 4~~	~~3~~	~~2~~	~~Short~~

Table 41: DCH requirements in multi-path propagation conditions during SSDT Mode

Test Number	$\frac{DPCH\_E_c}{I_{or}}$ ~~DCH_E_b/N_t~~	**BLER**
1		10^{-1}
		10^{-2}
2		10^{-1}
		10^{-2}
3		10^{-1}
		10^{-2}
4		10^{-1}
		10^{-2}

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25.101 CR 016 Current Version: 3.0.0

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

For submission to: RAN#6
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for approval	X
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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 [ ] Core Network [ ]
(at least one should be marked with an X)

Source: Nortel Networks **Date:** 9.12.99

Subject: Change of propagation conditions

Work item:

Category:
(only one category Shall be marked With an X)

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
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: Align propagation conditions for FDD and TDD modes

Clauses affected: Annex B

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:

Annex B (normative): Propagation conditions

B.1 General

B.2 Propagation Conditions

B.2.1 Static propagation condition

The propagation for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading and multi-paths exist for this propagation model.

B.2.2 Multi-path fading propagation conditions

Table B2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum.

Table B2: Propagation Conditions for Multi path Fading Environments

Case 1, speed 3km/h		**Case 2, speed 3 km/h**		**Case 3, 120 km/h**	
Relative Delay [ns]	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**	**Relative Delay [ns]**	**Average Power [dB]**
0	0	0	0	0	0
976	-10	976	0	260	-3
		12000~~20000~~	0	521	-6
				781	-9

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3G CHANGE REQUEST

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25.101	**CR**	**017**	Current Version: 3.0.0
3G specification number ↑		*↑ CR number as allocated by 3G support team*	

For submision to TSG	RAN#6	for approval	X	*(only one box should*
list TSG meeting no. here ↑		for information		*be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

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

Source:	TSG RAN WG4	**Date:**	
Subject:	CR for minimum requirements for UE power class 1 and 2 in 25.101		
3G Work item:	UTRA		

Category:	F	Correction	X
	A	Corresponds to a correction in a 2G specification	
(only one category shall be marked with an X)	B	Addition of feature	
	C	Functional modification of feature	
	D	Editorial modification	

Reason for change:	TSG-RAN WG4 would like to clarify that the minimum requirements for UE power class1 and class2 are not defined and are for further study in 25.101
Clauses affected:	Section 4

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G core specifications		→ List of CRs:	
	MS test specifications	X	→ List of CRs:	
	BSS test specifications		→ List of CRs:	
	O&M specifications		→ List of CRs:	

Other comments:	

4 General

4.1 Measurement uncertainty

The requirements given in these specifications are absolute. Compliance with these requirements is determined by comparing the measured values with the specified limits, without making allowance for measurement uncertainty.

4.2 Power Classes

For the UE power classes 1 and 2, a number of RF parameter are not specified. It is intended that these are part of a later release.

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Bath, United Kingdom, 06-10 Dec 1999

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25.101 CR 018 Current Version: 3.0.0

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

For submission to: RAN#6
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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 [ ] Core Network [ ]
(at least one should be marked with an X)

Source: RAN WG4 **Date:** 10 Dec-99

Subject: Downlink Inner loop power control

Work item: UTRA

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	
C	Functional modification of feature	X
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	
Release 00	

Reason for change: Minimum requirements for inner loop power control are modified, adding the parameter SIR target.

Clauses affected: 8.8

Other specs affected:

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

Other comments:

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8.8 Inner loop power control in downlink

Performance of the inner loop power control in downlink is determined by the Block Error Rate (BLER) values and by the measured average transmitted DPCH_Ec/Ior value.

8.8.1 Inner loop power control in the downlink

8.8.1.1 Minimum requirements

For the parameters specified in Table 44, the BLER and DPCH_Ec~~d~~/Ior value shall not exceed the values specified in Table 45.

Note

1. Power control is ON during the test.
2. Power control step size is 1 dB.

Table 44: Test parameters for downlink inner loop power control

Parameter	Unit	Test 1	Test 2
$\hat{I}_{or}/I_{oc}$	dB	9	-1
I_{oc}	dBm/3.84 MHz	-60	-60
Information Data Rate	kbps	12.2	12.2
TFCI	-	on	on
Propagation Conditions		TBD	TBD
SIR target		FFS	FFS
$DCH\ \ E_b/N_t$	dB		

Table 45: Requirements in downlink inner loop power control

Parameter	Unit	Test 1	Test 2
$\frac{DPCH\_E_c}{I_{or}}$	dB	FFS	FFS
~~Target Quality~~BLER on DTCH		~~FFS~~0.01	~~FFS~~0.01
Confidence level for $\frac{DPCH\_E_c}{I_{or}}$	%		