TSG RAN Meeting #13 **RP-010625**
Beijing, China, 18-21 September 2001

Title: **CRs (Rel-4) to TS 25.102**

Source **TSG RAN WG4**

Agenda item: **8.4.4**

RAN4 Tdoc	Spec	CR	Title	Cat	Phase	Curr Ver	New Ver
R4-011165	25.102	75	Out of synchronisation handling for 1.28 Mcps TDD option	F	Rel-4	4.1.0	4.2.0
R4-011168	25.102	76	Power control downlink - constant BLER target (1.28 Mcps TDD option)	F	Rel-4	4.1.0	4.2.0
R4-011266	25.102	77	Correction of frequency range for receiver spurious emissions (1.28 Mcps TDD option)	F	Rel-4	4.1.0	4.2.0
R4-011287	25.102	78	Clarification in Spectrum emission mask section for 1.28 Mcps TDD option	F	Rel-4	4.1.0	4.2.0
R4-010870	25.102	79	UE Performance Requirements (1.28Mcps TDD)	F	Rel-4	4.1.0	4.2.0
R4-010913	25.102	80	Power definition corrections for 1.28 Mcps TDD option.	F	Rel-4	4.1.0	4.2.0

3GPP TSG RAN WG4 Meeting #19 **R4-011165**

Edinburgh, Great Britain, 3rd - 7th September 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.102** **CR** **75** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Out-of synchronisation handling for 1.28 Mcps TDD option
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	03/09/2001
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

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

Reason for change:	⌘	The present minimum requirement is narrowly defined to cover only one test case. The parameter values are refined since the old test was too sensitive.
Summary of change:	⌘	A general minimum requirement is added and the previous test for 1.28 Mcps TDD option is given as a “test case” in a new section. The same action is done for the DTX section. Additionally, new values for the out-of-synchronisation thresholds are proposed. The DTX test case is aligned with RAN 1 specification.
Consequences if not approved:	⌘	The requirement will be ambiguous, since the spec would not define what the actual minimum requirement is other than for the specific test case. Since the out of synchronisation test is too sensitive, UE may switch off transmitter too often.

Clauses affected:	⌘	6.4.3.1.2, 6.4.3.2.2 and (new sections) 6.4.3.1.2.1, 6.4.3.1.2.2, 6.4.3.2.2.1, 6.4.3.2.2.2		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	34.122
Other comments:	⌘			

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.4.3 Out-of-synchronisation handling of output power

The UE shall monitor the DPCH quality in order to detect a loss of the signal on Layer 1, as specified in TS 25.224. The thresholds $Q_{out,}$ $Q_{in,}$ Q_{sbout} and Q_{sbin} specify at what DPCH quality levels the UE shall shut its power off and when it shall turn its power on, respectively. The thresholds are not defined explicitly, but are defined by the conditions under which the UE shall shut its transmitter off and turn it on, as stated in this clause.

6.4.3.1 Requirement for continuous transmission

6.4.3.1.1 3.84 Mcps TDD Option

The parameters in Table 6.4 are defined using the DL reference measurement channel (12.2) kbps specified in Annex A.2.2, where the CRC bits are replaced by data bits, and with static propagation conditions.

Table 6.4: DCH parameters for test of Out-of-synch handling – continuous transmission

Parameter	Unit	Value
$\hat{I}_{or}/I_{oc}$	dB	-1
I_{oc}	dBm/3.84 MHz	-60
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	See figure 6.1
Information Data Rate	kbps	13
TFCI	-	On

The conditions for when the UE shall shut its transmitter off and when it shall turn it on are defined by the parameters in Table 6.4 together with the DPCH power level as defined in Figure 6.1.

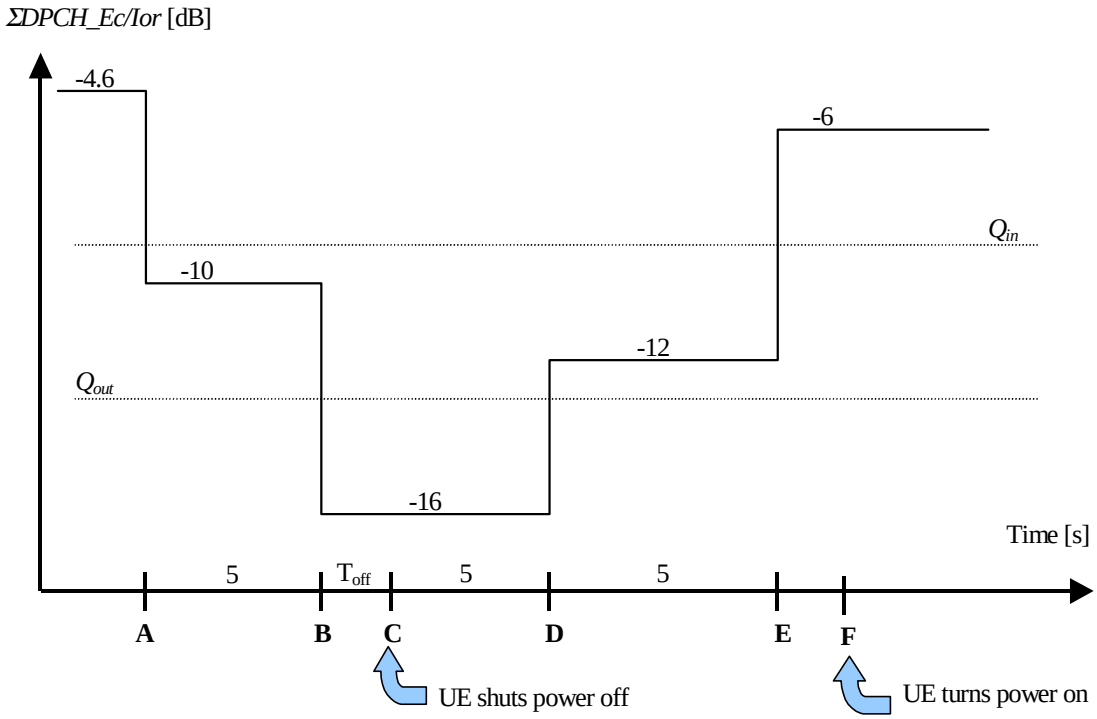


Figure 6.1. Conditions for out-of-synch handling in the UE. The indicated thresholds Q_{out} and Q_{in} are only informative – continuous transmission

The requirements for the UE are that

1) The UE shall not shut its transmitter off before point B.

2) The UE shall shut its transmitter off before point C, which is T_{off} = 200 ms after point B

3) The UE shall not turn its transmitter on between points C and E.

4) The UE shall turn its transmitter on before point F, which is T_{on} = 200 ms after Point E.

6.4.3.1.2 1.28 Mcps TDD Option

6.4.3.1.2.1 Minimum Requirement

When the UE estimates the DPCH quality over the last 160 ms period to be worse than a threshold Q_{out}, the UE shall shut its transmitter off within 40 ms. The UE shall not turn its transmitter on again until the DPCH quality exceeds an acceptable level Q_{in}. When the UE estimates the DPCH quality over the last 160 ms period to be better than a threshold Q_{in}, the UE shall again turn its transmitter on within 40 ms.

The DPCH quality shall be monitored in the UE and compared to the thresholds Q_{out} and Q_{in} for the purpose of monitoring synchronisation. The threshold Q_{out} should correspond to a level of DPCH quality where no reliable detection of the TPC commands transmitted on the downlink DPCH can be made. This can be at a TPC command error ratio level of e.g. 30%. The threshold Q_{in} should correspond to a level of DPCH quality where detection of the TPC commands transmitted on the downlink DPCH is significantly more reliable than at Q_{out}. This can be at a TPC command error ratio level of e.g. 20%.

The UE transmitter shall be considered "off" if the transmitted power is below the level defined in subclause 6.5.1 (Transmit off power). Otherwise the transmitter shall be considered as "on".

6.4.3.1.2.2 Test case

This subclause specifies a test case, which provides additional information for how the minimum requirement should be interpreted for the purpose of conformance testing in case of continuous transmission for 1.28 Mcps TDD option.

The conditions for the continous test case are as follows:

The handover triggering level shall be set very high to ensure that the beacon channel power never exceeds the value of 10dB above it. Therefore the averaging time for signal quality will always be 160 milliseconds.

The quality levels at the thresholds Q_{out} and Q_{in} correspond to different signal levels depending on the downlink conditions DCH parameters. For the conditions in Table 6.4, a signal with the quality at the level Q_{out} can be generated by a ΣDPCH_Ec/Ior ratio of -13 dB, and a signal with Q_{in} by a ΣDPCH_Ec/Ior ratio of -9 dB. In this test, the DL reference measurement channel (12.2) kbps specified in subclause A.2.2, where the CRC bits are replaced by data bits, and with static propagation conditions is used.

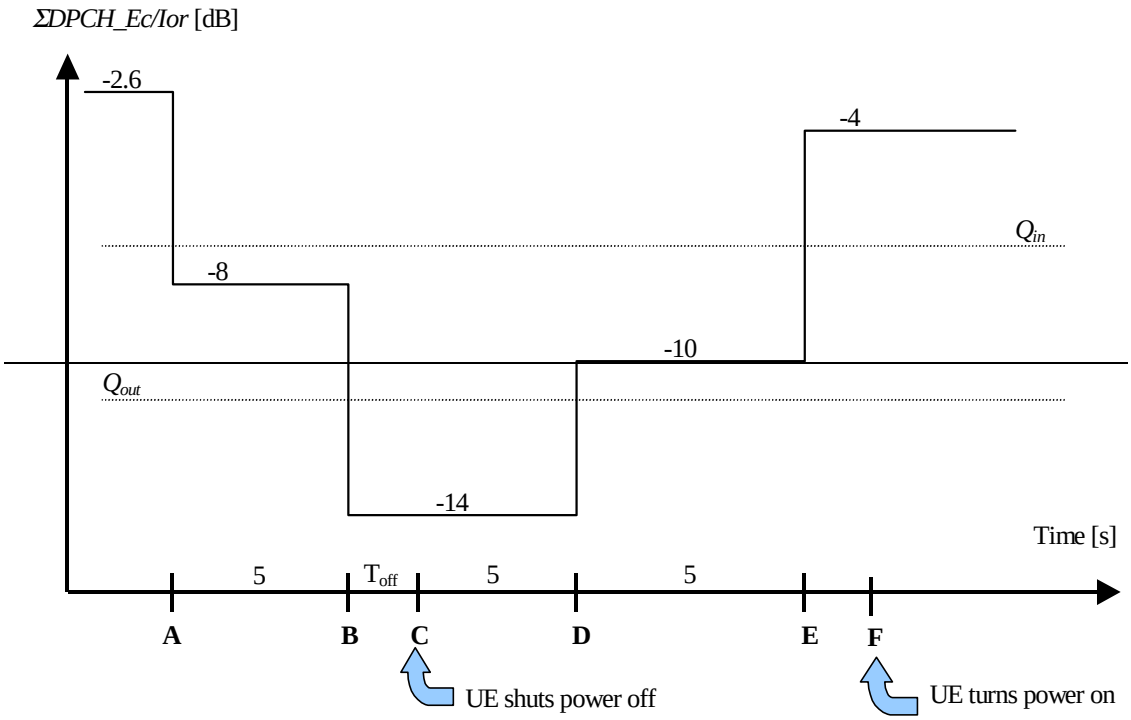
~~The parameters in Table 6.4AA are defined using the DL reference measurement channel (12.2) kbps specified in Annex A 2.2, where the CRC bits are replaced by data bits, and with static propagation conditions.~~

Table 6.4AA: DCH parameters ~~for test~~ the of Out-of-synch handling test case- 1.28 Mcps TDD option – continuous transmission

Parameter	Unit	Value
$\hat{I}_{or}/I_{oc}$	~~D~~dB	-1
I_{oc}	dBm/1.28 MHz	-60
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	~~D~~dB	See figure ~~1~~6.1AA
Information Data Rate	Kbps	12.2
TFCI	-	On

Figure 6.1AA shows an example scenario where the ΣDPCH_Ec/Ior ratio varies from a level where the DPCH is demodulated under normal conditions, down to a level below Q_{out} where the UE shall shut its power off and then back up to a level above Q_{in} where the UE shall turn the power back on.

~~The conditions for when the UE shall shut its transmitter on and when it shall turn it on are defined by the parameters in table 6.4AA together with the DPCH power level as defined in Figure 1AA.~~



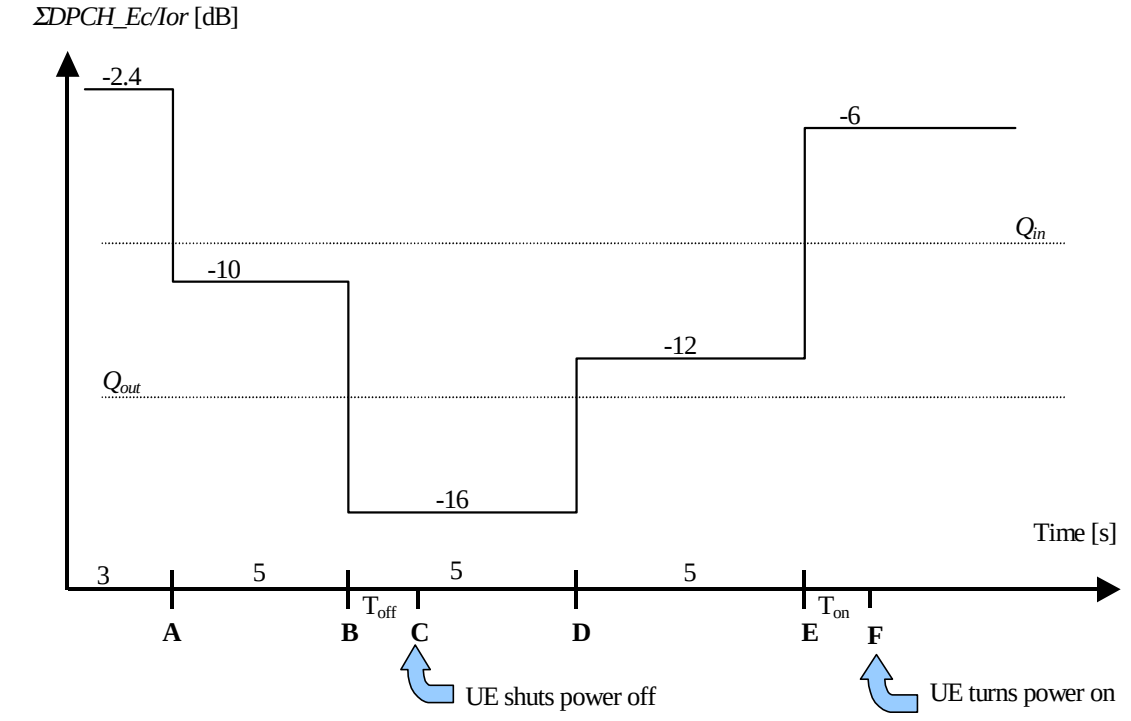


Figure 6.1AA: ~~Conditions~~Test case for out-of-synch handling in the UE - 1.28 Mcps TDD option – continuous transmission. ~~The indicated thresholds Q_{out} and Q_{in} are only informative.~~

In this test case, ~~T~~the requirements for the UE are that:

1) The UE shall not shut its transmitter off before point B.

2) The UE shall shut its transmitter off before point C, which is T_{off} = 200 ms after point B

3) The UE shall not turn its transmitter on between points C and E.

4) The UE shall turn its transmitter on before point F, which is T_{on} = 200 ms after Point E.

6.4.3.2 Requirement for discontinuous transmission

During DTX, there are periods when the UE will receive no data from the UTRAN. As specified in TS 25.224, in order to keep synchronisation, Special Bursts shall be transmitted by the UTRAN during these periods of no data.

This test shall be done during a period of no data transmission. During this period, the conditions for when the UE shall shut its transmitter on or off are defined by the power level of the received Special Bursts.

The handover triggering level shall be set very high to ensure that the beacon channel power never exceeds the value of 10dB above it. Therefore the averaging time for signal quality will always be 160 milliseconds.

The UTRAN transmits Special Bursts as specified in TS 25.224. The Special Burst Scheduling Parameter, SBSP = 4, which means that UTRAN sends a Special Burst at every fourth frame with no data. Therefore, the UTRAN sends a Special Burst in the first frame without data transmission, followed by 3 frames with no transmission; followed by a Special Burst, etc.

In case of 1.28Mcps TDD option the Special Burst will be sent in both subframes of the relevant frame designated for the Special Burst.

While the normal data is transmitted using two channelization codes, the Special Burst is transmitted with only one channelization code. Therefore the total energy per chip during Special Bursts is 3 dB lower than for continuous data transmission. The Special Bursts are represented by “SBs” in the figure.

6.4.3.2.1 3.84 Mcps TDD Option

The DCH parameters are shown in Table 6.4A.

Table 6.4A: DCH parameters for test of Out-of-synch handling – discontinuous transmission

Parameter	Unit	Value
$\hat{I}_{or}/I_{oc}$	dB	-1
I_{oc}	dBm/3.84 MHz	-60
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	See figure 6.1A
Bits/burst (including TFCI bits)	bits	244
TFCI	-	On

During the period of 3 frames with no data, the UE will receive a very low power, which is not shown in the figure. The power shown in the figure is the power of the Special Burst (which is 3dB lower than power for normal data, which is shown in Figure 6.1A).

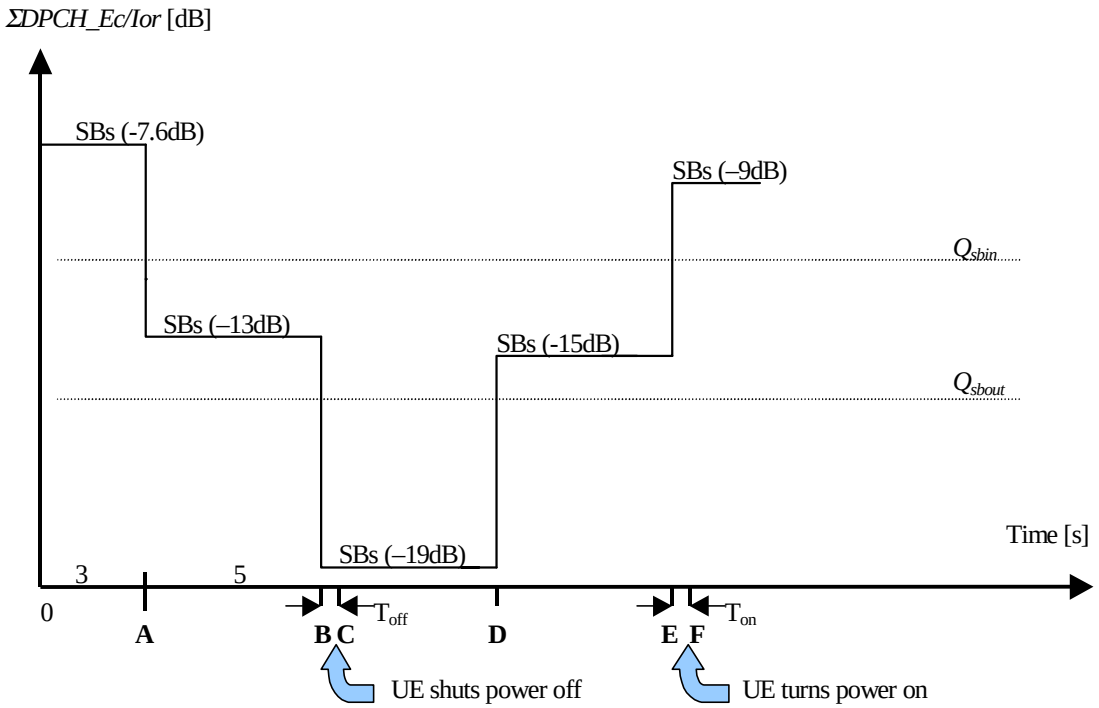


Figure 6.1A. Conditions for out-of-synch handling in the UE - discontinuous transmission. The indicated thresholds Q_{sbout} and Q_{sbin} are only informative.

The requirements for the UE are that:

1) The UE shall not shut its transmitter off before point B.
2) The UE shall shut its transmitter off before point C, which is T_{off} = 200 ms after point B.
3) The UE shall not turn its transmitter on between points C and E.
4) The UE shall turn its transmitter on before point F, which is T_{on} = 200 ms after Point E.

6.4.3.2.2. 1.28 Mcps TDD Option

6.4.3.2.2.1 Minimum Requirement

During DTX, there are periods when the UE will receive no data from the UTRAN. As specified in TS 25.224, in order to keep synchronization, Special Bursts shall be transmitted by the UTRAN during these periods of no data.

The DPCH quality shall be monitored in the UE and compared to the thresholds Q_{sbout} and Q_{sbin} for the purpose of monitoring synchronisation during downlink DTX. The threshold Q_{sbout} should correspond to a level of DPCH quality where no reliable detection of the TPC commands transmitted on the downlink DPCH can be made. This can be at a TPC command error ratio level of e.g. 30. The threshold Q_{sbin} should correspond to a level of DPCCH quality where detection of the TPC commands transmitted on the downlink DPCH is significantly more reliable than at Q_{sbout}. This can be at a TPC command error ratio level of e.g. 20%.

When the UE does not detect at least one special burst with a quality above a threshold Q_{sbout} over the last 160 ms period, the UE shall shut its transmitter off within 40 ms. The UE shall not turn its transmitter on again until the special burst quality exceeds an acceptable level Q_{sbin}. When the UE estimates the special burst quality to be better than a threshold Q_{sbin} over the last 160 ms, the UE shall again turn its transmitter on within 40 ms.

The UE transmitter shall be considered “off” if the transmitted power is below the level defined in subclause 6.5.1 (Transmit off power). Otherwise the transmitter shall be considered as “on”.

6.4.3.2.2.2 Test case

This subclause specifies a test case, which provides additional information for how the minimum requirement should be interpreted for the purpose of conformance testing in case of discontinuous transmission.

The conditions for the discontinuous test case are as follows :

The handover triggering level shall be set very high to ensure that the beacon channel power never exceeds the value of 10dB above it. Therefore the averaging time for signal quality will always be 160 milliseconds.

The UTRAN transmits Special Bursts as specified in TS 25.224. The Special Burst Scheduling Parameter, SBSP = 4, which means that UTRAN sends a Special Burst at every fourth frame with no data. Therefore, the UTRAN sends a Special Burst in the first frame without data transmission, followed by 3 frames with no transmission; followed by a Special Burst, etc. Additionally, the Special Burst will be sent in both subframes of the relevant frame designated for the Special Burst.

The DCH parameters are shown in Table 6.4B.

The quality levels at the thresholds Q_{sbout} and Q_{sbin} correspond to different signal levels depending on the downlink conditions DCH parameters. For the conditions in Table 6.4B, a signal with the quality at the level Q_{sbout} can be generated by a DPCH_Ec/Ior ratio during received special bursts of –16 dB, and a signal with Q_{sbin} by a DPCH_Ec/Ior ratio during received special bursts of -12 dB.

Table 6.4B: DCH parameters for the~~test of~~ Out-of-synch handling test case– 1.28 Mcps TDD option - discontinuous transmission

Parameter	Unit	Value
$\hat{I}_{or}/I_{oc}$	dB	-1
I_{oc}	dBm/1.28~~3.84~~ MHz	-60
$\frac{DPCH\_E_c}{I_{or}}$	dB	See figure 6.1B
Bits/burst (including TFCI bits)	bits	88 in each subframe
TFCI	-	On

Figure 6.1B shows an example scenario where the DPCH_Ec/Ior ratio during received special bursts varies from a level where the DPCH in DTX mode is demodulated under normal conditions, down to a level below Q_{sbout} where the UE shall shut its power off and then back up to a level above Q_{sbin} where the UE shall turn the power back on.

While the normal data is transmitted using two channelization codes, the Special Burst is transmitted with only one channelization code. Therefore the total energy per chip during Special Bursts is 3 dB lower than for continuous data transmission. The Special Bursts are represented by “SBs” in the figure.

During the period of 3 frames with no data, the UE will receive a very low power, which is not shown in the figure. In the fourth frame the Special Burst will be sent in both subframes designated to carry the Special Burst during DTX. The power shown in the figure is the power of the Special Burst. ~~(which is 3dB lower than power for normal data, which is shown in Figure 6.1B).~~

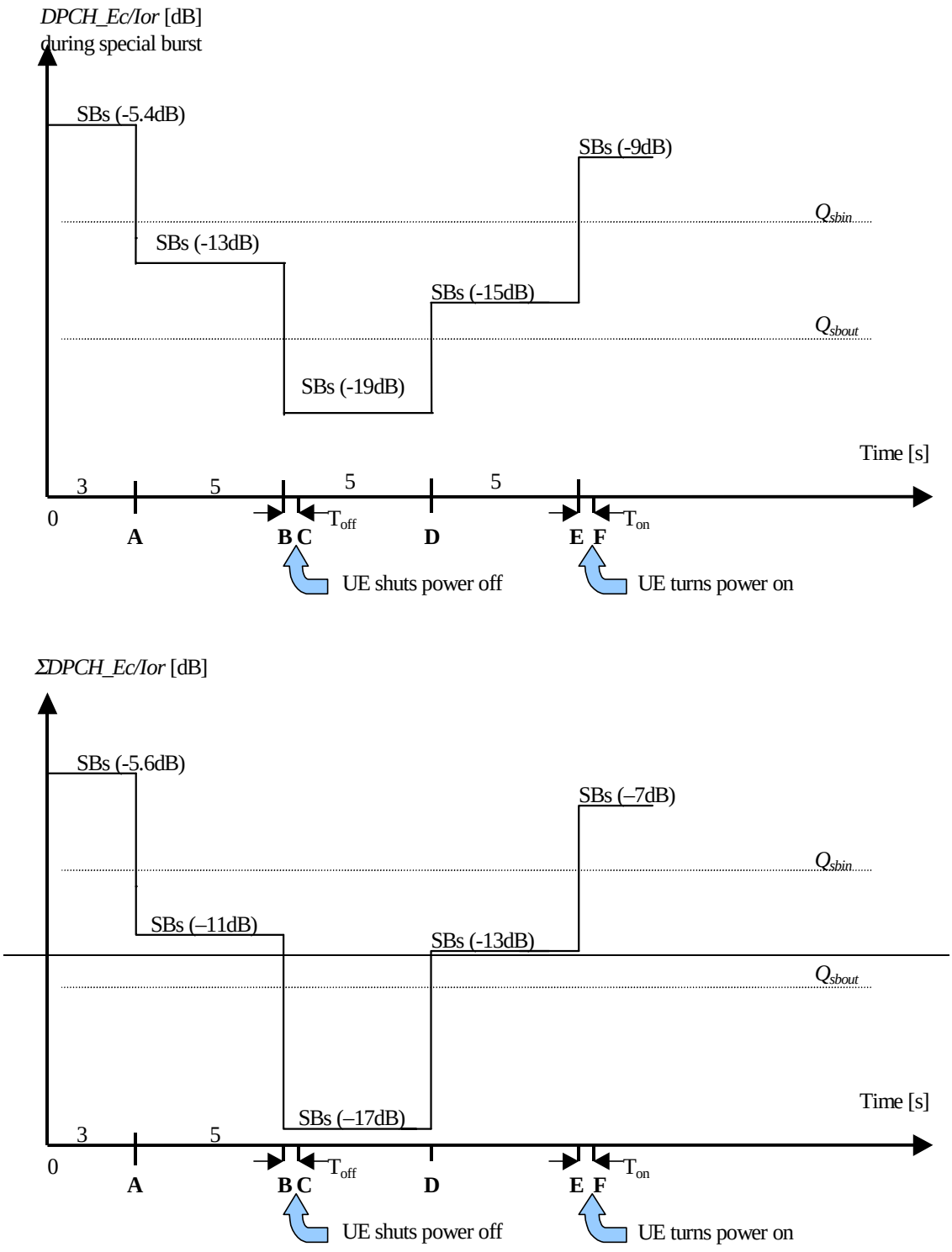


Figure 6.1B: ~~Conditions~~ Test case for out-of-synch handling in the UE –1.28 Mcps TDD option - discontinuous transmission. ~~The indicated thresholds Q_{sbout} and Q_{sbin} are only informative.~~

In this test, ~~T~~the requirements for the UE are that:

1) The UE shall not shut its transmitter off before point B.
2) The UE shall shut its transmitter off before point C, which is T_{off} = 200 ms after point B.
3) The UE shall not turn its transmitter on between points C and E.
4) The UE shall turn its transmitter on before point F, which is T_{on} = 200 ms after Point E.

3GPP TSG RAN WG4 Meeting #19 **R4-011168**

Edinburgh, Great Britain, 3rd - 7th September 2001

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CHANGE REQUEST

⌘ **TS 25.102 CR 76** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Power control downlink – constant BLER target (1.28 Mcps TDD option)
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	03/09/2001
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

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

Reason for change:	⌘	No performance requirements for power control downlink exist for the 1.28 Mcps TDD option.
Summary of change:	⌘	Definition of performance requirement for power control downlink – constant BLER target for the 1.28 Mcps TDD option
Consequences if not approved:	⌘	Incomplete specification

Clauses affected:	⌘	8.5.		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	TS 34.122
Other comments:	⌘			

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8.5 Power control in downlink ~~for 3.84 Mcps TDD Option~~

Power control in the downlink is the ability of the UE receiver to converge to the required link quality set by the network while using minimum downlink power.

8.5.1 Power control in downlink, constant BLER target ~~Minimum requirements~~

8.5.1.1 Minimum requirements 3.84 Mcps TDD option

For the parameters specified in Table 8.12 the average downlink $\hat{I}_{or}/I_{oc}$ power shall not exceed the values specified in Table 8.13. Downlink power control is ON during the test.

Table 8.12: Test parameters for downlink power control – constant BLER Target (3.84 Mcps TDD option)

Parameter	Unit	Test 1	Test 2
$\frac{DPCH\_E_c}{I_{or}}$	dB	0	[ ]
I_{oc}	dBm/3.84 MHz	-60	
Information Data Rate	kbps	12.2	
Target quality value on DTCH	BLER	0.01	
Propagation condition		Case 4	

Table 8.13: Requirements for downlink power control – constant BLER Target (3.84 Mcps TDD option)

Parameter	Unit	Test 1	Test 2
$\hat{I}_{or}/I_{oc}$	DB	[ ]	[ ]
Measured quality on DTCH	BLER	0.01±30%	0.01±30%

8.5.1.2 Minimum requirements 1.28 Mcps TDD option

For the parameters specified in Table 8.13A the average downlink $\hat{I}_{or}/I_{oc}$ shall be below the specified value in Table 8.13B more than 90% of the time. BLER shall be as shown in table 8.13B more than 90% of the time. Downlink power control is ON during the test.

Table 8.13A: Test parameters for downlink power control – constant BLER Target (1.28 Mcps TDD option)

Parameter	Unit	Value
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	0
I_{oc}	dBm/1.28 Mhz	-60
Information data rate	kbps	12.2
Target quality on DTCH	BLER	0.01
Propagation condition		Case 1
DL Power Control step size, Δ_{TPC}	dB	1
Maximum_DL_power *	dB	[0]
Minimum_DL_power *	dB	[-27]

Note: Power is compared to P-CCPCH power

Table 8.13B: Requirements for downlink power control – constant BLER Target (1,28 Mcps TDD option)

Parameter	Unit	Value
$\hat{I}_{or}/I_{oc}$	dB	[7.5]
Measured quality on DTCH	BLER	0.01±30%

3GPP TSG RAN WG4 Meeting #19 **R4-011266**

Edinburgh, Great Britain, 3rd - 7th September 2001

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CHANGE REQUEST

⌘ **TS 25.102 CR 77** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction of frequency range for receiver spurious emissions (1.28 Mcps TDD option)
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	03/09/2001
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
- ***F*** *(correction)*
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Detailed explanations of the above categories can be found in 3GPP TR 21.900.

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

Reason for change:	⌘	The current frequency range for receiver spurious emission requirements is inconsistence with is proposed in ITU-R M.[UNWANT-MS].
Summary of change:	⌘	The starting frequency for receiver spurious emission requirements is changed from 9kHz to 30MHz as proposed in ITU-R M.[UNWANT-MS].
Consequences if not approved:	⌘	There will be inconsistency with ITU-R recommendation M.[UNWANT]. It will casue further inconsistency with each regulations those follow the recommendation.

Clauses affected:	⌘	7.9.1.2		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	34.122
Other comments:	⌘			

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7.9 Spurious emissions

The Spurious Emissions Power is the power of emissions generated or amplified in a receiver that appear at the UE antenna connector.

7.9.1 Minimum Requirement

7.9.1.1 3.84 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 7.10: Receiver spurious emission requirements (3.84 Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
9 kHz – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.92 GHz – 2.01 GHz and 2.025 GHz – 2.11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the UE.
1.9 GHz – 1.92 GHz and 2.01 GHz – 2.025 GHz and 2.11 GHz – 2.170 GHz	-60 dBm	3.84 MHz	With the exception of frequencies between 12.5MHz below the first carrier frequency and 12.5MHz above the last carrier frequency used by the UE.
2.170 GHz – 12.75 GHz	-47 dBm	1 MHz	

7.9.1.2 1.28 Mcps TDD Option

The power of any spurious emission shall not exceed:

Table 7.10A: Receiver spurious emission requirements (1.28 Mcps TDD Option)

Band	Maximum level	Measurement Bandwidth	Note
30 MHz~~9 kHz~~ – 1 GHz	-57 dBm	100 kHz	
1 GHz – 1.9 GHz and 1.92 GHz – 2.01 GHz and 2.025 GHz – 2.11 GHz	-47 dBm	1 MHz	With the exception of frequencies between 4MHz below the first carrier frequency and 4MHz above the last carrier frequency used by the UE.
1.9 GHz – 1.92 GHz and 2.01 GHz – 2.025 GHz and 2.11 GHz – 2.170 GHz	-64 dBm	1.28 MHz	With the exception of frequencies between 4MHz below the first carrier frequency and 4MHz above the last carrier frequency used by the UE.
2.170 GHz – 12.75 GHz	-47 dBm	1 MHz	

3GPP TSG RAN WG4 Meeting #19 **R4-011287**

Edinburgh, Great Britain, 3rd - 7th September 2001

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CHANGE REQUEST

⌘ **25.102** **CR** **78** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Clarification in Spectrum emission mask section for 1.28 Mcps TDD option
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	03/09/2001
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

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

Reason for change:	⌘	The definition of Δf in the spectrum emission mask is missing.
Summary of change:	⌘	Addition of definition for Δf. Correction of ambiguous terms.
Consequences if not approved:	⌘	Possible misunderstanding of spectrum emission mask requirement.

Clauses affected:	⌘	6.6.2.1.2.1		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	34.122
Other comments:	⌘			

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.6.2.1 Spectrum emission mask

6.6.2.1.1 3.84 Mcps TDD Option

The spectrum emission mask of the UE applies to frequencies, which are between 2.5 and 12.5MHz from a carrier frequency. The out of channel emission is specified relative to the UE output power in measured in a 3.84 MHz bandwidth.

6.6.2.1.1.1 Minimum Requirement

The power of any UE emission shall not exceed the levels specified in table 6.5.

Table 6.5: Spectrum Emission Mask Requirement (3.84 Mcps TDD Option)

Frequency offset from carrier Δf	Minimum requirement	Measurement bandwidth
2.5 - 3.5 MHz	-35 -15*(Δf – 2.5) dBc	30 kHz *
3.5 - 7.5 MHz	-35- 1*(Δf-3.5) dBc	1 MHz **
7.5 - 8.5 MHz	-39 - 10*(Δf – 7.5) dBc	1 MHz **
8.5 - 12.5 MHz	-49 dBc	1 MHz **
* The first and last measurement position with a 30 kHz filter is 2.515 MHz and 3.485 MHz		
** The first and last measurement position with a 1 MHz filter is 4 MHz and 12 MHz. As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be different from the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth.		
The lower limit shall be –50dBm/3.84 MHz or the minimum requirement presented in this table which ever is the higher.		

6.6.2.1.2 1.28 Mcps TDD Option

The spectrum emission mask of the UE applies to frequencies, which are between 0.8 and 4.0MHz from a carrier frequency. The out of channel emission is specified relative to the UE output power in measured in a 1.28 MHz bandwidth.

6.6.2.1.2.1 Minimum Requirement

The power of any UE emission shall not exceed the levels specified in table 6.5A

Table 6.5A: Spectrum Emission Mask Requirement (1.28 Mcps TDD Option)

~~Frequency offset from carrier~~ Δf* in MHz	Minimum requirement	Measurement bandwidth
0.8 ~~MHz~~	-35 dBc	30 kHz **
0.8-1.8 ~~MHz~~	~~-35 – 14*(Δf-0.8) dBc~~ $\left\{-35-14\cdot\left(\frac{\Delta f}{MHz}-0.8\right)\right\}dBc$	30 kHz **
1.8-2.4 ~~MHz~~	~~-49 – 25*(Δf-1.8)dBc~~ $\left\{-49-25\cdot\left(\frac{\Delta f}{MHz}-1.8\right)\right\}dBc$	30 kHz **
2.4 – 4.0 ~~MHz~~	-49 dBc	1MHz ***
* Δf is the separation between the carrier frequency and the centre of the measuring filter.		
** The first and last measurement position with a 30 kHz filter is at Δf equals to 0.815 MHz and 2.385 MHz.		
*** The first and last measurement position with a 1 MHz filter is at Δf equals to 2.9MHz and 3.5MHz .As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. To improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be different from the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth.		
The lower limit shall be –55dBm/1.28 MHz or the minimum requirement presented in this table which ever is the higher.		

3GPP TSG RAN WG4 Meeting #19 **R4-010870**
Edinburgh, Great Britain, 3rd - 7th September 2001

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CHANGE REQUEST

⌘ **25.102** **CR** 79 ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	UE Performance Requirements (1.28Mcps TDD)
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	9-13 July 2001
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	To refine the values of performance requirements, the values based on average of simulation results provided by Panasonic and Siemens are proposed.
Summary of change:	⌘	UE Performance Requirements for 1.28Mcps TDD option in Section 8 are changed.
Consequences if not approved:	⌘	The values of UE performance requirements for 1.28Mcps TDD option may not be reliable.

Clauses affected:	⌘	8.2.1.1.2, 8.3.1.1.2, 8.3.2.1.2, 8.3.3.1.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.2 Demodulation in static propagation conditions

8.2.1 Demodulation of DCH

The performance requirement of DCH in static propagation conditions is determined by the maximum Block Error Ratio (BLER). The BLER is specified for each individual data rate of the DCH. DCH is mapped into the Dedicated Physical Channel (DPCH).

8.2.1.1 Minimum requirement

8.2.1.1.1 3.84 Mcps TDD Option

For the parameters specified in Table 8.2 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.3. These requirements are applicable for TFCS size 16.

Table 8.2: DCH parameters in static propagation conditions (3.84 Mcps TDD Option)

Parameters	Unit	Test 1	Test 2	Test 3	Test 4	Test 5
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	-6	-3	0	0	0
I_{oc}	dBm/3.84 MHz	-60				
Cell Parameter*		0,1				-
DPCH Channelization Codes*	C(k,Q)	C(i,16) i=1,2	C(i,16) i=1 . .5	C(i,16) i=1 . .9	C(i,16) i=1 . .8	-
OCNS Channelization Code*	C(k,Q)	C(3,16)	C(6,16)	-	-	-
Information Data Rate	kbps	12.2	64	144	384	2048
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.						

Table 8.3: Performance requirements in AWGN channel (3.84 Mcps TDD Option).

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	1.1	10^{-2}
2	3.5	10^{-1}
	3.8	10^{-2}
3	3.4	10^{-1}
	3.6	10^{-2}
4	2.7	10^{-1}
	3.0	10^{-2}
5	3.5	10^{-1}
	3.6	10^{-2}

8.2.1.1.2 1.28 Mcps TDD Option

For the parameters specified in Table 8.2A the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.3A.

Table 8.2A: DCH parameters in static propagation conditions (1.28 Mcps TDD Option)

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		8	2	2	0
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-10	-10	-10	0
I_{oc}	DBm/1.28MHz	-60			
Information Data Rate	Kbps	12.2	64	144	384

Table 8.3A: Performance requirements in AWGN channel (1.28 Mcps TDD Option)

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	3.6~~3.1~~	10^{-2}
2	2.4~~2.1~~	10^{-1}
	2.7~~2.4~~	10^{-2}
3	2.8~~2.5~~	10^{-1}
	3.2~~2.8~~	10^{-2}
4	3.2~~2.8~~	10^{-1}

8.3 Demodulation of DCH in multipath fading conditions

8.3.1 Multipath fading Case 1

The performance requirement of DCH is determined by the maximum Block Error Ratio (BLER). The BLER is specified for each individual data rate of the DCH. DCH is mapped into the Dedicated Physical Channel (DPCH).

8.3.1.1 Minimum requirement

8.3.1.1.1 3.84 Mcps TDD Option

For the parameters specified in Table 8.4 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.5. These requirement are applicable for TFCS size 16.

Table 8.4: DCH parameters in multipath Case 1 channel (3.84 Mcps TDD Option)

Parameters	Unit	Test 1	Test 2	Test 3	Test 4	Test 5
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	DB	-6	-3	0	0	0
I_{oc}	dBm/3.84 MHz	-60				
Cell Parameter*		0,1				-
DPCH Channelization Codes*	C(k,Q)	C(i,16) i=1,2	C(i,16) i=1 . .5	C(i,16) i=1 . .9	C(i,16) i=1 . .8	-
OCNS Channelization Code*	C(k,Q)	C(3,16)	C(6,16)	-	-	-
Information Data Rate	kbps	12.2	64	144	384	2048
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.						

Table 8.5: Performance requirements in multipath Case 1 channel (3.84 Mcps TDD Option).

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	13.9	10^{-2}
2	13.7	10^{-1}
	19.8	10^{-2}
3	14.1	10^{-1}
	20.6	10^{-2}
4	13.8	10^{-1}
	20.0	10^{-2}
5	13.2	10^{-1}
	17.8	10^{-2}

8.3.1.1.2 1.28 Mcps TDD Option

For the parameters specified in Table 8.4A the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.5A.

Table 8.4A: DCH parameters in multipath Case 1 channel (1.28 Mcps TDD Option)

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		8	2	2	0
$\frac{DPCH_o \_ E_c}{I_{or}}$	DB	-10	-10	-10	0
I_{oc}	dBm/1.28MHz	-60			
Information Data Rate	Kbps	12.2	64	144	384

Table 8.5A: Performance requirements in multipath Case 1 channel (1.28 Mcps TDD Option)

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	22.4~~22.2~~	10^{-2}
2	15.8~~15.0~~	10^{-1}
	22.9~~22.0~~	10^{-2}
3	16.6~~16.0~~	10^{-1}
	23.9~~23.0~~	10^{-2}
4	16.5~~16.0~~	10^{-1}
	23.5~~23.0~~	10^{-2}

8.3.2 Multipath fading Case 2

The performance requirement of DCH is determined by the maximum Block Error Ratio (BLER). The BLER is specified for each individual data rate of the DCH. DCH is mapped into the Dedicated Physical Channel (DPCH).

8.3.2.1 Minimum requirement

8.3.2.1.1 3.84 Mcps TDD Option

For the parameters specified in Table 8.6 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.7. These requirements are applicable for TFCS size 16.

Table 8.6: DCH parameters in multipath Case 2 channel (3.84 Mcps TDD Option)

Parameters	Unit	Test 1	Test 2	Test 3	Test 4	Test 5
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	DB	-3	0	0	0	0
I_{oc}	dBm/3.84 MHz	-60				
Cell Parameter*		0,1				-
DPCH Channelization Codes*	C(k,Q)	C(i,16) i=1,2	C(i,16) i=1 . .5	C(i,16) i=1 . .9	C(i,16) i=1 . .8	-
OCNS Channelization Code*	C(k,Q)	C(3,16)	-	-	-	-
Information Data Rate	kbps	12.2	64	144	384	2048
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.						

Table 8.7: Performance requirements in multipath Case 2 channel (3.84 Mcps TDD Option).

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	5.8	10^{-2}
2	5.7	10^{-1}
	9.2	10^{-2}
3	9.3	10^{-1}
	12.7	10^{-2}
4	8.8	10^{-1}
	12.0	10^{-2}
5	10.3	10^{-1}
	12.7	10^{-2}

8.3.2.1.2 1.28 Mcps TDD Option

For the parameters specified in Table 8.6A the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.7A.

Table 8.6A: DCH parameters in multipath Case 2 channel (1.28 Mcps TDD Option)

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		8	2	2	0
$\frac{DPCH_o\_E_c}{I_{or}}$	dB	-10	-10	-10	0
I_{oc}	dBm/1.28MHz	-60			
Information Data Rate	Kbps	12.2	64	144	384

Table 8.7A: Performance requirements in multipath Case 2 channel (1.28 Mcps TDD Option)

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	13.6~~13.2~~	10^{-2}
2	9.8~~9.5~~	10^{-1}
	13.9~~13.7~~	10^{-2}
3	10.3~~10.0~~	10^{-1}
	14.4~~14.0~~	10^{-2}
4	10.5~~10.0~~	10^{-1}
	14.4~~14.0~~	10^{-2}

8.3.3 Multipath fading Case 3

The performance requirement of DCH is determined by the maximum Block Error Ratio (BLER). The BLER is specified for each individual data rate of the DCH. DCH is mapped into the Dedicated Physical Channel (DPCH).

8.3.3.1 Minimum requirement

8.3.3.1.1 3.84 Mcps TDD Option

For the parameters specified in Table 8.8 the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.9. These requirements are applicable for TFCS size 16.

Table 8.8: DCH parameters in multipath Case 3 channel (3.84 Mcps TDD Option)

Parameters	Unit	Test 1	Test 2	Test 3	Test 4	Test 5
$\frac{\Sigma DPCH\_E_c}{I_{or}}$	dB	-3	0	0	0	0
I_{oc}	dBm/3.84 MHz	-60				
Cell Parameter*		0,1				-
DPCH Channelization Codes*	C(k,Q)	C(i,16) i=1,2	C(i,16) i=1 . .5	C(i,16) i=1 . .9	C(i,16) i=1 . .8	-
OCNS Channelization Code*	C(k,Q)	C(3,16)	-	-	-	-
Information Data Rate	kbps	12.2	64	144	384	2048
*Note: Refer to TS 25.223 for definition of channelization codes and cell parameter.						

Table 8.9: Performance requirements in multipath Case 3 channel (3.84 Mcps TDD Option).

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	4.8	10^{-2}
2	5.8	10^{-1}
	8.5	10^{-2}
	10.7	10^{-3}
3	10.3	10^{-1}
	13.3	10^{-2}
	16.0	10^{-3}
4	8.9	10^{-1}
	11.5	10^{-2}
	13.6	10^{-3}
5	9.4	10^{-1}
	11.5	10^{-2}
	13.6	10^{-3}

8.3.3.1.2 1.28 Mcps TDD Option

For the parameters specified in Table 8.8A the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.9A.

Table 8.8A: DCH parameters in multipath Case 3 channel (1.28 Mcps TDD Option)

Parameters	Unit	Test 1	Test 2	Test 3	Test 4
Number of $DPCH_o$		8	2	2	0
$\frac{DPCH_o \_ E_c}{I_{or}}$	dB	-10	-10	-10	0
I_{oc}	dBm/1.28MHz	-60			
Information Data Rate	Kbps	12.2	64	144	384

Table 8.9A: Performance requirements in multipath Case 3 channel (1.28 Mcps TDD Option)

Test Number	$\frac{\hat{I}_{or}}{I_{oc}}$ [dB]	BLER
1	11.7~~10.8~~	10^{-2}
2	9.0~~8.3~~	10^{-1}
	11.7~~11.1~~	10^{-2}
	14.3~~13.8~~	10^{-3}
3	9.1~~8.7~~	10^{-1}
	11.2~~10.6~~	10^{-2}
	12.7~~11.8~~	10^{-3}
4	9.3~~8.8~~	10^{-1}
	10.8~~10.3~~	10^{-2}
	12.0~~11.5~~	10^{-3}

3GPP TSG RAN WG4 Meeting #19 **R4-010913**

Edinburgh, Great Britain, 3rd - 7th September 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.102** **CR** **80** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Power definition corrections for 1.28 Mcps TDD option.
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD
Date:	⌘	9-13/07/2001
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

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

Reason for change:	⌘	Corrections of power related entities.
Summary of change:	⌘	Correction of minimum output power requirement for 1.28 Mcps TDD option. Clarification of ACLR requirement for 1.28 Mcps TDD option,
Consequences if not approved:	⌘	Possible misunderstanding of minimum output power requirement and ACLR requirement.

Clauses affected:	⌘	6.4.2.1.2, 6.6.2.2.1.2
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.4.2 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 closed loop and open loop power control indicates a minimum transmit output power is required.

6.4.2.1 Minimum requirement

6.4.2.1.1 3.84 Mcps TDD Option

The minimum transmit power shall be better than–44 dBm measured with a filter that has a root-raised cosine (RRC) filter response with a roll-off-factor $\alpha = 0.22$ and a bandwidth equal to the chip rate.

6.4.2.1.2 1.28 Mcps TDD Option

The minimum output ~~transmit~~ power shall be less ~~better~~ than–49 dBm measured with a filter that has a root-raised cosine (RRC) filter response with a roll-off-factor $\alpha = 0.22$ and a bandwidth equal to the chip rate.

---NEXT SECTION---

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 in an adjacent channels. Both the transmitted power and the adjacent channel power are measured with a filter response that has a Root-Raised Cosine (RRC) filter response with roll-off $\alpha = 0.22$ and a bandwidth equal to the chip rate.

6.6.2.2.1 Minimum requirement

6.6.2.2.1.1 3.84 Mcps TDD Option

If the adjacent channel power is greater than –50dBm then the ACLR shall be better than the value specified in Table 6.6.

Table 6.6:UE ACLR (3.84 Mcps TDD Option)

Power Class	adjacent channel	ACLR limit
2, 3	UE channel ± 5 MHz	33 dB
2, 3	UE channel ± 10 MHz	43 dB

NOTE:

1) The requirement shall still be met in the presence of switching transients.
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.

6.6.2.2.1.2 1.28 Mcps TDD Option

If the adjacent channel power is greater than –55dBm/1.28MHz then the ACLR shall be ~~better~~ higher than the value specified in Table 6.6A.

Table 6.6A: UE ACLR (1.28 Mcps TDD Option)

Power Class	adjacent channel	ACLR limit
2, 3	UE channel ± 1.6 MHz	33 dB
2, 3	UE channel ± 3.2 MHz	43 dB

NOTE:

1) The requirement shall still be met in the presence of switching transients.
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.