TSG-RAN Meeting #12 *RP-010359*
Stockholm, Sweden, 12 - 15 June 2001

Title: **Agreed CRs (Release 4) to TS 25.102**

Source: **TSG-RAN WG4**

Agenda item: **8.4.4**

WG4 doc	Status WG4	Spec	CR	Phase	Title	Cat	V old	V new
R4-010509	agreed	25.102	60	Rel-4	2MB/Sec downlink reference channel for 1.28 Mcps TDD	F	4.0.0	4.1.0
R4-010548	agreed	25.102	61	Rel-4	Correction in BCH measurement channel description (1.28 Mcps TDD option)	F	4.0.0	4.1.0
R4-010549	agreed	25.102	62	Rel-4	Correction of UE radio capabilities	F	4.0.0	4.1.0
R4-010511	agreed	25.102	63	Rel-4	Out-of-sync handling during DTX for 1.28Mcps TDD Option	F	4.0.0	4.1.0
R4-010801	agreed	25.102	66	Rel-4	Clarification of UARFCN channel number for 1.28 Mcps TDD	F	4.0.0	4.1.0

3GPP TSG RAN WG4 Meeting #17 **R4-010509**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.102** **CR** **60** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	2Mbit/Sec downlink Service Mapping for 1.28Mcps TDD Option
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	21-25 May, 2001
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential 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:	⌘	WG1 technical report, TR25.928, has specified the 2Mbit/sec downlink channel for 1.28 Mcps TDD Option. This is not included as reference measurement channel in the current TS25.102 specification.
Summary of change:	⌘	Service mapping for 2Mbit/sec downlink channel for 1.28 Mcps TDD Option is added.
Consequences if not approved:	⌘	Test conditions are incomplete.

Clauses affected:	⌘	A.2.8
Other specs affected:	⌘	☐ Other core specifications ⌘ **X** Test specifications ☐ O&M Specifications
Other comments:	⌘	

A.2.8.2 1.28 Mcps TDD Option

~~(void)~~

Table A.2A

Parameter	Value
Information data rate	2048 kbps
RU's allocated	5TS (1*SF1) = 80RU/5ms
Midamble	144
Interleaving	10 ms
Power control (TPC)	6 Bit/user/10ms
TFCI	48 Bit/user/10ms
Synchronisation Shift (SS)	6 Bit/user/10ms
Inband signalling DCCH	no
Coding	no
Modulation	8PSK

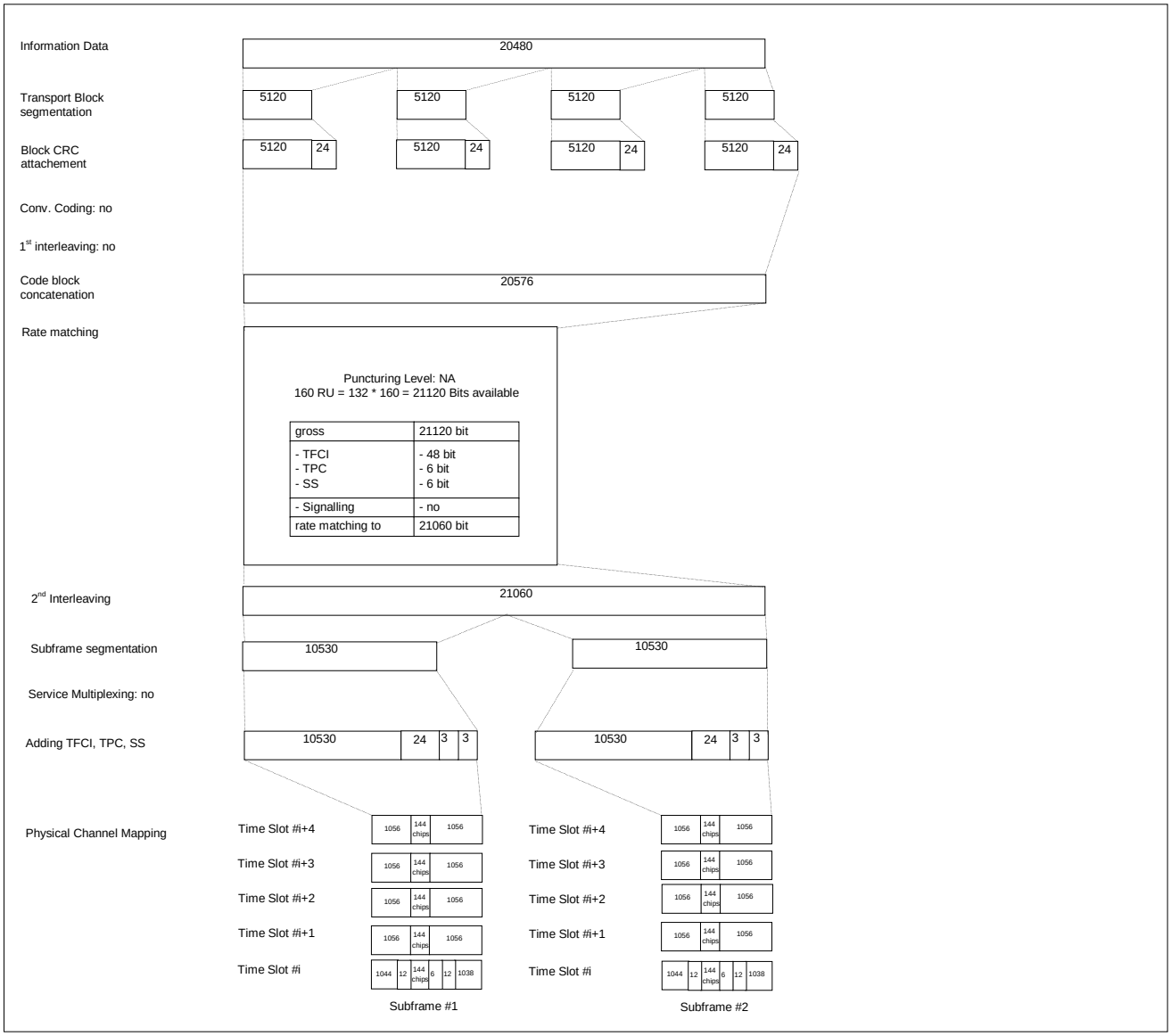

Figure A.2A

3GPP TSG RAN WG4 Meeting #17 **R4-010548**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.102** **CR** **61** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	Correction in BCH measurement channel description (1.28 Mcps TDD option)
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	18. Apr. 2001
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(essential 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:	⌘	Incorrect values after 2nd interleaving in BCH measurement channel description for 1.28 Mcps TDD option
Summary of change:	⌘	Numbers in row 2nd Interleaving corrected
Consequences if not approved:	⌘	Incorrect values

Clauses affected:	⌘	A.2.6.2.		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.
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.

A.2.6 BCH reference measurement channel

[mapped to 1 code SF16]

A.2.6.1 3.84 Mcps TDD Option

Table A.6

Parameter	Value
Information data rate:	12.3 kbps
RU´s allocated	1 RU
Midamble	**512** chips
Interleaving	20 ms
Power control	0 bit
TFCI	0 bit
Puncturing level	10%

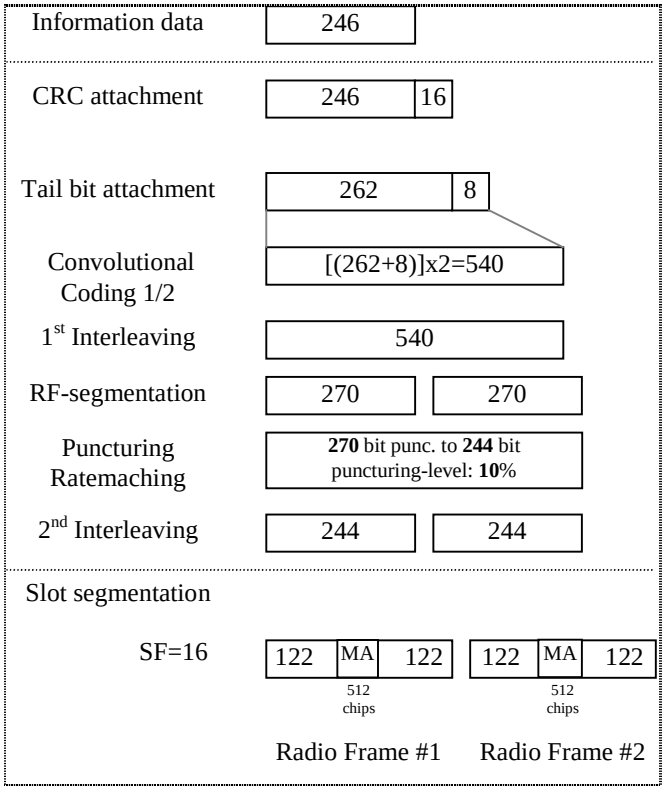

Figure A.6

A.2.6.2 1.28 Mcps TDD Option

Table A.6A

Parameter	Value
Information data rate:	12.3 kbps
RU´s allocated	2 RU
Midamble	144 chips
Interleaving	20 ms
Power control	0 bit
TFCI	0 bit
Puncturing level	13%

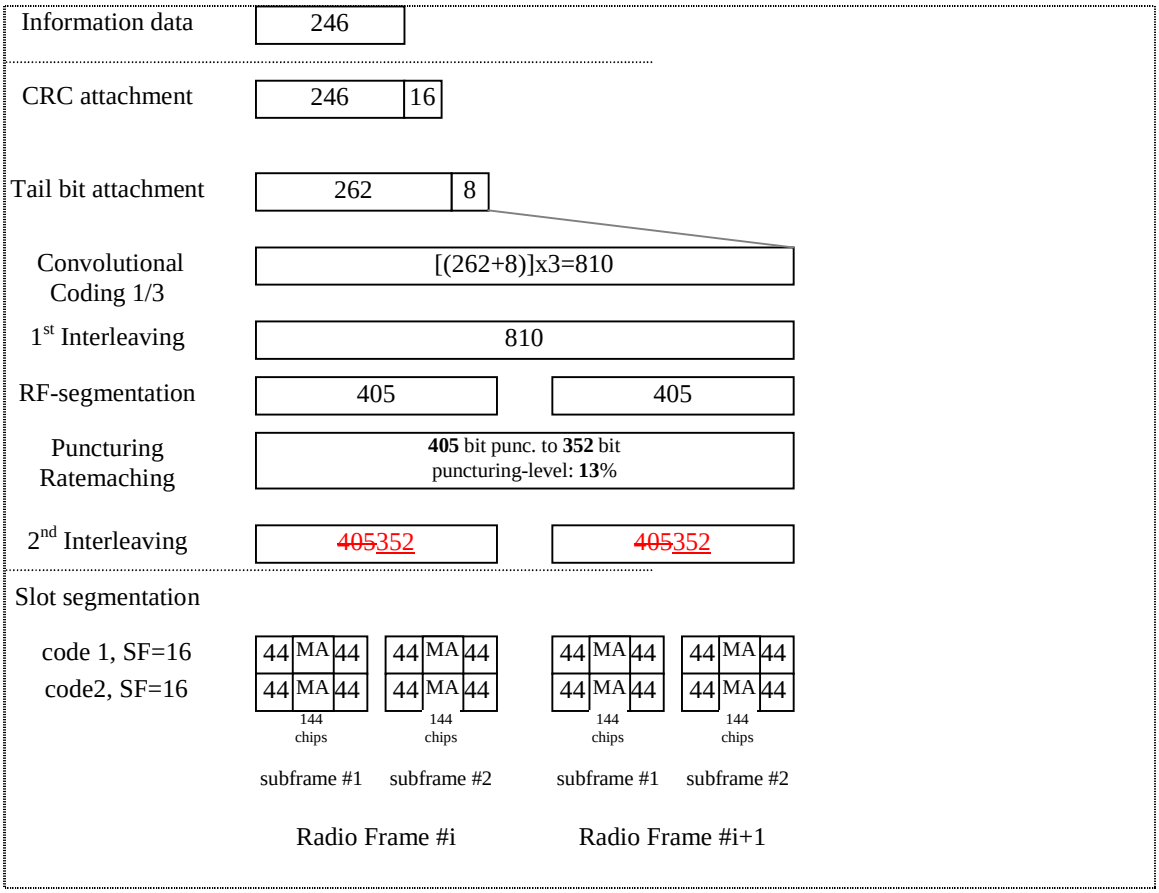
Information data
246
CRC attachment
246
16
Tail bit attachment
262
8
Convolutional Coding 1/3
[(262+8)]x3=810
1st Interleaving
810
RF-segmentation
405
405
Puncturing Ratemaching
405 bit punc. to 352 bit puncturing-level: 13%
2nd Interleaving
405352
405352
Slot segmentation
code 1, SF=16
code2, SF=16
44 MA 44
44 MA 44
144 chips
subframe #1
subframe #2
Radio Frame #i
Radio Frame #i+1

Figure A.6A

3GPP TSG RAN WG4 Meeting #17 **R4-010549**

Gothenburg, Sweden 21st - 25th May 2001

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CHANGE REQUEST

⌘ **25.102** **CR** **62** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	Correction of UE capabilities
Source:	⌘	RAN WG4
Work item code:	⌘	TEI4
Date:	⌘	18. Apr. 2001
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(essential 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:	⌘	Value range of possible radio frequency bands is incomplete
Summary of change:	⌘	Correction to be in line with TS 25.306
Consequences if not approved:	⌘	Inconsistency to TS 25.306

Clauses affected:	⌘	Annex D		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.
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.

Annex D (informative): Terminal capabilities (TDD)

This section provides the UE capabilities related to 25.102.

This section shall be aligned with TS25.306, UE Radio Access Capabilities regarding TDD RF parameters. These RF UE Radio Access capabilities represent options in the UE, that require signalling to the network.

Table D.1 provides the list of UE radio access capability parameters and possible values for 25.102

Table D.1: RF UE Radio Access Capabilities	UE radio access capability parameter	Value range
TDD RF parameters	UE power class (25.102 section 6.2.1)	2, 3 NOTE: Only power classes 2 and 3 are part of R99
	Radio frequency bands (25.102 section 5.2)	a), b), c), a+b), a+c), b+c), a+b+c)
	Chip rate capability (25.102)	3.84 Mcps,1.28 Mcps respectively

3GPP TSG RAN WG4 Meeting #17 **R4-010511**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.102** **CR** **63** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	Out-of-sync handling during DTX for 1.28Mcps TDD Option
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	21-25 May, 2001
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(essential 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:	⌘	WG1 Specification, TS25.224, has specified procedures for use of Special Bursts during DTX and has clarified the processing of these bursts to support Out-of-Sync Handling of output power. In prior version the test conditions used when testing the UE transmit power requirements did not include DTX for 1.28 Mcps TDD Option.
Summary of change:	⌘	Include DTX in the test conditions for 1.28 Mcps TDD Option when testing UE transmit power requirements.
Consequences if not approved:	⌘	Test conditions are incomplete.

Clauses affected:	⌘	6.4.3.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☒ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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 synchronization, 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

~~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.~~

~~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, as defined in Figure 6.1A.~~

~~The conditions for the performance requirement 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.~~

The DCH parameters are shown in Table 6.4A. ~~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.~~

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).

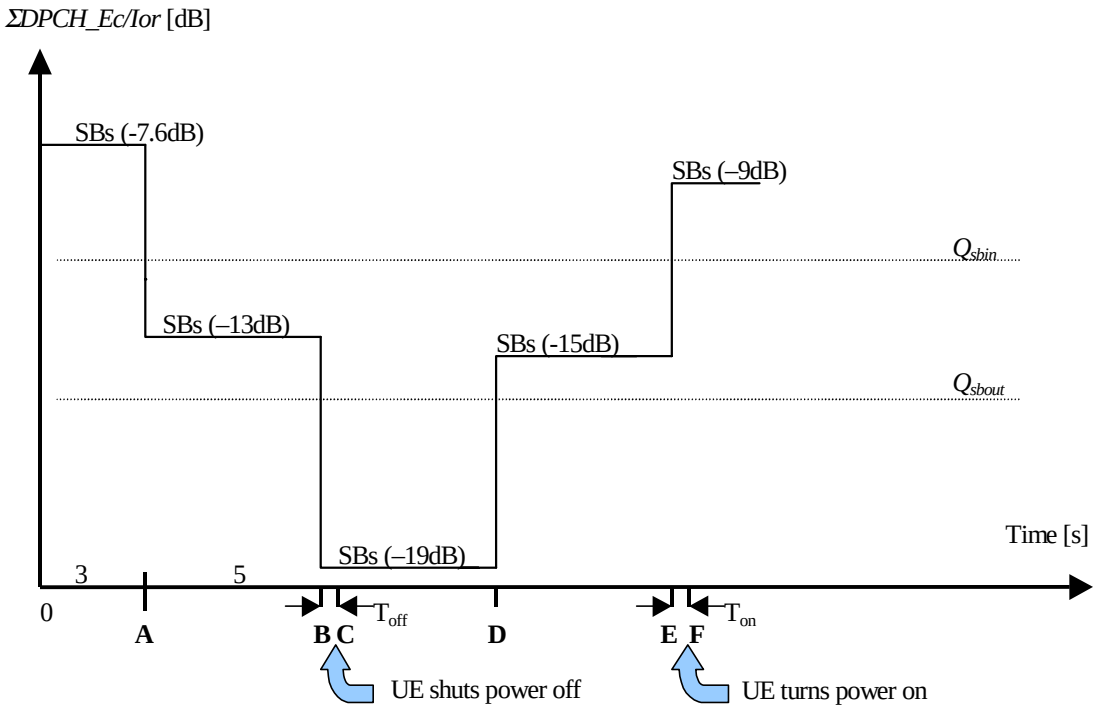

Figure 6.1A. Conditions for out-of-synch handling in the UE - discontinuous transmission. The indicated thresholds Q_{sbout} and Q_{sbin} are only informative.

The requirements for the UE are that:
The UE shall not shut its transmitter off before point B.
The UE shall shut its transmitter off before point C, which is T_{off} = 200 ms after point B.
The UE shall not turn its transmitter on between points C and E.
The UE shall turn its transmitter on before point F, which is T_{on} = 200 ms after Point E.

6.4.3.2.1 1.28 Mcps TDD Option

~~(void)~~

The DCH parameters are shown in Table 6.4B.

Table 6.4B: 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 6.1B
Bits/burst (including TFCI bits)	bits	88 in each subframe
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. 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).

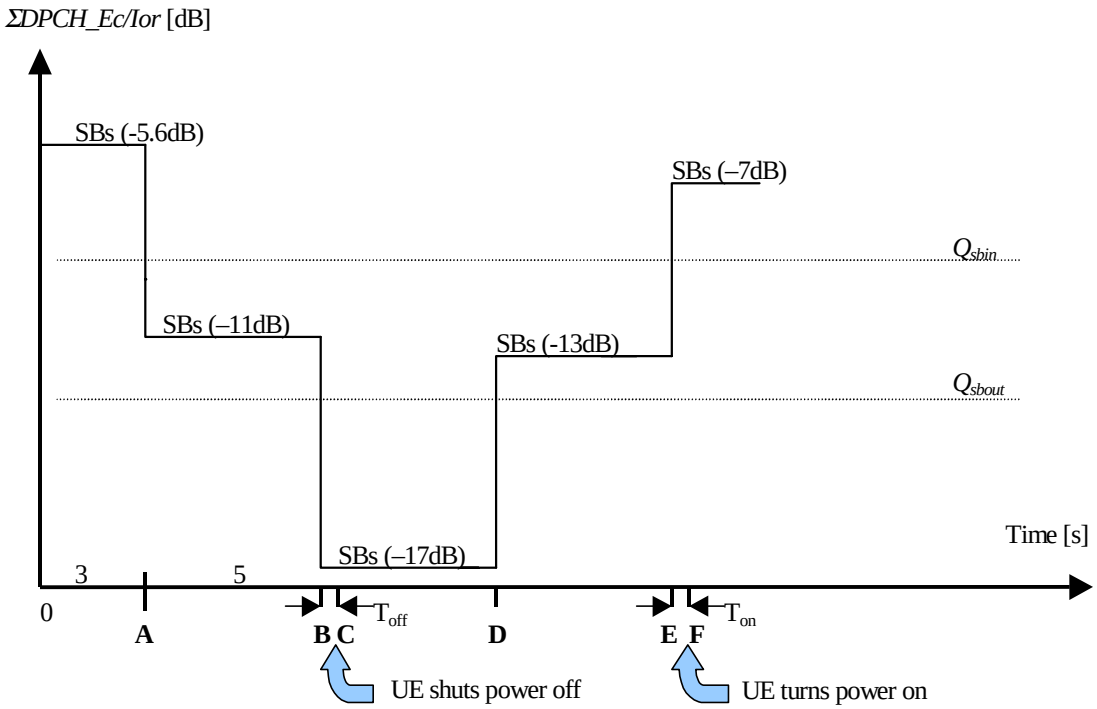

Figure 6.1B. Conditions for out-of-synch handling in the UE - discontinuous transmission. The indicated thresholds Q_{sbout} and Q_{sbin} are only informative.

The requirements for the UE are that:
The UE shall not shut its transmitter off before point B.
The UE shall shut its transmitter off before point C, which is T_{off} = 200 ms after point B.
The UE shall not turn its transmitter on between points C and E.
The UE shall turn its transmitter on before point F, which is T_{on} = 200 ms after Point E.

3GPP TSG RAN WG4 Meeting #17 **R4-010801**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.102** **CR** **66** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	Clarification of UARFCN channel number for 1.28 Mcps TDD
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	31. May. 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:	⌘	Ambiguity in required UARFCN range
Summary of change:	⌘	The range of UARFCN is specified for each frequency band
Consequences if not approved:	⌘	Performance of UTRA is degraded due to possible cell selection time. High and low channel is now identified

Clauses affected:	⌘	New subclause 5.4.4		
Other specs affected:	⌘	☐ Other core specifications **X** Test specifications ☐ O&M Specifications	⌘	TS 34.122
Other comments:	⌘	Re-draft of Tdoc R4-010547 which reflects only the R4 Cat F changes of Tdoc R4-010547.		

How to create CRs using this form:

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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.

5 Frequency bands and channel arrangement

5.1 General

The information presented in this section is based on the chip rates of 3.84 Mcps Option and 1.28 Mcps Option..

NOTE: Other chip rates may be considered in future releases.

5.2 Frequency bands

UTRA/TDD is designed to operate in the following bands;

a) 1900 – 1920 MHz: Uplink and downlink transmission

2010 – 2025 MHz Uplink and downlink transmission

b)* 1850 – 1910 MHz: Uplink and downlink transmission

1930 – 1990 MHz: Uplink and downlink transmission

c)* 1910 – 1930 MHz: Uplink and downlink transmission

* Used in ITU Region 2

Additional allocations in ITU region 2 are FFS.

Deployment in existing or other frequency bands is not precluded.

5.3 TX–RX frequency separation

5.3.1 3.84 Mcps TDD Option

No TX-RX frequency separation is required as Time Division Duplex (TDD) is employed. Each TDMA frame consists of 15 timeslots where each timeslot can be allocated to either transmit or receive.

5.3.2 1.28 Mcps TDD Option

No TX-RX frequency separation is required as Time Division Duplex (TDD) is employed. Each subframe consists of 7 main timeslots where all main timeslots (at least the first one) before the single switching point are allocated DL and all main timeslots (at least the last one) after the single switching point are allocated UL.

5.4 Channel arrangement

5.4.1 Channel spacing

5.4.1.1 3.84 Mcps TDD Option

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

5.4.1.2 1.28 Mcps TDD Option

The nominal channel spacing is 1.6 MHz, but this can be adjusted to optimise performance in a particular deployment scenario.

5.4.2 Channel raster

The channel raster is 200 kHz, which means that the carrier frequency must be a 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:

$N_t = 5*F$ 0.0 MHz ≤ F≤ 3276.6 MHz where F is the carrier frequency in MHz

5.4.4. UARFCN

5.4.4.1 3.84 Mcps TDD Option

(void)

5.4.4.2 1.28 Mcps TDD Option

The following UARFCN range shall be supported for each band.

Table 5.2: UTRA Absolute Radio Frequency Channel Number 1.28 Mcps TDD Option

Frequency Band	Frequency Range	UARFCN Uplink and Downlink transmission
For operation in frequency band as defined in subclause 5.2 (a)	1900-1920 MHz 2010-2025 MHz	9504 to 9596 10054 to 10121
For operation in frequency band as defined in subclause 5.2 (b)	1850-1910 MHz 1930-1990 MHz	9254 to 9546 9654 to 9946
For operation in frequency band as defined in subclause 5.2 (c)	1910-1930 MHz	9554 to 9646