TSG-RAN Meeting #10 ***RP-000594***
Bangkok, Thailand, 6 - 8 December 2000

Title: Agreed CRs to TS 25.142

Source: TSG RAN WG4

Agenda Item:5.4.3

Tdoc Num	TS	CR number	Title	Type	Status	Cur Ver	New Ver
R4-000821	25.142	38	Clarifications for EVM definition	F	agreed	3.3.0	3.4.0
R4-000854	25.142	39	Conformance test description for frequency stability	F	agreed	3.3.0	3.4.0
R4-000855	25.142	40	Conformance test description for inner loop power control	F	agreed	3.3.0	3.4.0
R4-000856	25.142	41	Conformance test description for power control dynamic range	F	agreed	3.3.0	3.4.0
R4-000857	25.142	42	Conformance test description for transmit ON/OFF power	F	agreed	3.3.0	3.4.0
R4-000858	25.142	43	Conformance test description for occupied bandwidth	F	agreed	3.3.0	3.4.0
R4-000859	25.142	44	Conformance test description for performance requirements	F	agreed	3.3.0	3.4.0
R4-000965	25.142	45	Editorial correction to ACLR test	F	agreed	3.3.0	3.4.0
R4-000967	25.142	46	Correction to reference measurement channels	F	agreed	3.3.0	3.4.0

3GPP TSG RAN WG4 Meeting #14 **R4-000821**

Sophia, France 13th - 17th November 2000

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CHANGE REQUEST

⌘ **25.142 CR 38** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

*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:	⌘	Clarifications for EVM definition
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 10.11.2000
Category:	⌘	**F** ***Release:*** ⌘ R99

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:	⌘	The current EVM definition does not explicitly state that the signal should be analysed using the active channels
Summary of change:	⌘	The word “active” is inserted into Annex E
Consequences if not approved:	⌘	If the wrong spreading factor is used in the analysis, the tets signal will be over optimised and the result returned will be too low.

Clauses affected:	⌘	Annex C.2.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	Identical CR to 25.141

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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.

Annex C (normative):
Global In-Channel TX-Test

C.1 General

The global in-channel Tx test enables the measurement of all relevant parameters that describe the in-channel quality of the output signal of the Tx under test in a single measurement process. The parameters describing the in-channel quality of a transmitter, however, are not necessarily independent. The algorithm chosen for description inside this annex places particular emphasis on the exclusion of all interdependencies among the parameters. Any other algorithm (e.g. having better computational efficiency) may be applied, as long as the results are the same within the accuracy limits.

C.2 Definition of the process

C.2.1 Basic principle

The process is based on the comparison of the actual **output signal of the TX under test**, received by an ideal receiver, with a **reference signal**, that is generated by the measuring equipment and represents an ideal error free received signal. The reference signal ~~should~~ shall be composed of the same number of codes at the correct spreading factors as contained in the test signal. Note, for simplification, the notation below assumes only one code and one spreading factor. All signals are represented as equivalent (generally complex) baseband signals.

C.2.2 Output signal of the TX under test

The output signal of the TX under test is acquired by the measuring equipment, filtered by a matched filter (RRC 0.22, correct in shape and in position on the frequency axis) and stored at one sample per chip at the Inter-Symbol-Interference free instants.
The following form represents the physical signal in the entire measurement interval:

one vector **Z**, containing N = ns x sf + ma complex samples;

with
ns: number of symbols in the measurement interval;
sf: number of chips per symbol. (sf: spreading factor) (see Note: Symbol length)
ma: number of midamble chips (only in TDD)

C.2.3 Reference signal

The reference signal is constructed by the measuring equipment according to the relevant TX specifications. It is filtered by the same matched filter, mentioned in E.2.2., and stored at the Inter-Symbol-Interference free instants. The following form represents the reference signal in the entire measurement interval:

one vector **R**, containing N = ns x sf + ma complex samples;

ns: number of symbols in the measurement interval;
sf: number of chips per symbol. (see Note: Symbol length)
ma: number of midamble chips (only in TDD)

3GPP TSG RAN WG4 Meeting #14 **R4-000854**

Sophia, France 13th - 17th November 2000

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CHANGE REQUEST

⌘ **TS 25.142 CR 39** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

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

Title:	⌘	Conformance test description for frequency stability
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 13 November 2000
Category:	⌘ **F**	***Release:*** ⌘ R99

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:	⌘	Alignment of the conformance test description for frequency stability with recent amendments incorporated into the core specification TS 25.105 via CR 045
Summary of change:	⌘	Introduction of the measurement period for frequency stability ("observed over a period of one timeslot")
Consequences if not approved:	⌘	Divergence of the conformance test description from the corresponding core specification

Clauses affected:	⌘	6.3
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.

6.3 Frequency stability

6.3.1 Definition and applicability

Frequency stability is the ability of the BS to transmit at the assigned carrier frequency.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

6.3.2 Conformance requirements

The BS frequency stability shall be within ± 0,05 ppm observed over a period of one timeslot.

The reference for this requirement is TS 25.105 subclause 6.3.1.

TS 25.105 subclause 6.3 specifies the additional requirement that the BS shall use the same frequency source for both RF generation and the chip clock. Compliance with this requirement is demonstrated by manufacturer's declaration; see subclause 5.4; a dedicated conformance test for this requirement is not defined.

6.3.3 Test purpose

The test purpose is to verify the accuracy of the carrier frequency across the frequency range and under normal and extreme conditions.

6.3.4 Method of test

6.3.4.1 Initial conditions

(1) The transmitter under test and all other transmitters of the base station (if any) are switched on.

(2) The power of the transmitters not under test (if any) are controlled down.

(3) Connect the tester to the BS antenna connector.

(4) Set the parameters of the transmitted signal according to table 6.3.4.1.1.

Table 6.3.4.1.1: Parameters of the transmitted signal for frequency stability test

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Number of DPCH in each active TS	1
BS output power setting	PRAT
Data content of DPCH	real life (sufficient irregular)

6.3.4.2 Procedure

(1) Measure the frequency error delta f across one burst (time slot), by applying the global in-channel Tx test method described in Annex C.

(2) Repeat step (1) for 200 bursts (time slots).

(3) Run steps (1) and (2) for RF channels Low / Mid / High.

6.3.5 Test requirements

For all measured bursts (time slots), the frequency error, derived according to subclause 6.3.4.2, shall not exceed 0,5 x 10E-7.

3GPP TSG RAN WG4 Meeting #14 **R4-000855**

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CHANGE REQUEST

⌘ **TS 25.142 CR 40** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

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

Title:	⌘	Conformance test description for inner loop power control
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 13 November 2000
Category:	⌘	**F** ***Release:*** ⌘ R99

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:	⌘	Alignment of the conformance test description for inner loop power control with recent amendments incorporated into the core specification TS 25.105 via CR 043
Summary of change:	⌘	Clarification with respect to the uplink/downlink mapping scheme of TPC bits
Consequences if not approved:	⌘	Divergence of the conformance test description from the corresponding core specification

Clauses affected:	⌘	6.4.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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6.4.1 Inner loop power control

Inner loop power control is the ability of the BS transmitter to adjust its output power in response to the UL received signal.

For inner loop correction on the Downlink Channel, the base station adjusts ~~its~~ the mean output power level of a CCTrCH in response to each valid power control bit received from the UE on the Uplink Traffic Channel based on the mapping of the TPC bits in uplink CCTrCH to downlink CCTrCH. Inner loop control is based on SIR measurements at the UE receiver, and the corresponding TPC commands are generated by the UE.

3GPP TSG RAN WG4 Meeting #14 **R4-000856**

Sophia, France 13th - 17th November 2000

CR-Form-v3

CHANGE REQUEST

⌘ **TS 25.142 CR 41** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

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

Title:	⌘	Conformance test description for power control dynamic range
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 13 November 2000
Category:	⌘	**F** ***Release:*** ⌘ R99

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:	⌘	Alignment of the conformance test description for power control dynamic range with the procedure adopted for both maximum and minimum output power
Summary of change:	⌘	Deletion of the current steps (4) and (7) of the test procedure, i.e. deletion of the averaging of power measurement taken on individual timeslots
Consequences if not approved:	⌘	Inconsistency between the measurements of both maximum and minimum output power on the one hand and power control dynamic range on the other hand

Clauses affected:	⌘	6.4.3
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.

6.4.3 Power control dynamic range

6.4.3.1 Definition and applicability

The power control dynamic range is the difference between the maximum and the minimum transmit output power for a specified reference condition.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

6.4.3.2 Conformance requirements

The DL power control dynamic range shall be greater than or equal to 30 dB.

The reference for this requirement is TS 25.105 subclause 6.4.3.1.

6.4.3.3 Test purpose

The test purpose is to verify the ability of the BS to control the power of a single code signal over the specified dynamic range.

6.4.3.4 Method of test

6.4.3.4.1 Initial conditions

(1) Connect the BS tester to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.4.3.4.1.1.

(3) Operate the BS in such a mode that it is able to interpret received TPC commands

(4) Start BS transmission.

NOTE: The BS tester used for this test must have the ability

- to analyze the output signal of the BS under test with respect to code domain power, by applying the global in-channel Tx test method described in Annex C;

- to simulate an UE with respect to the generation of TPC commands embedded in a valid UE signal.

Table 6.4.3.4.1.1: Parameters of the BS transmitted signal for power control dynamic range test

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
Number of DPCH in each active TS	1
Data content of DPCH	real life (sufficient irregular)

6.4.3.4.2 Procedure

(1) Configure the BS transmitter to enable power control steps of size 1 dB.

(2) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Increase Tx power". This sequence shall be sufficiently long so that the transmit output power of the active DPCH is controlled to reach its maximum, and shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS).

(3) Measure the power of the active DPCH over the 2464 active chips of an~~each~~ even time slot TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a

bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

~~(4)Average over TBD time slots.~~

~~(5)~~(4) Set the BS tester to produce a sequence of TPC commands related to the active DPCH, with content "Decrease Tx power". This sequence shall be sufficiently long so that the transmit output power of the active DPCH is controlled to reach its minimum, and shall be transmitted to the BS within the odd time slots TS i (receive time slots of the BS).

~~(6)~~(5) Measure the power of the active DPCH over the 2464 active chips of an~~each~~ even time slot TS i (this excludes the guard period), and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate. The power is determined by calculating the RMS value of the signal samples at the measurement filter output taken at the decision points.

~~(7)Average over TBD time slots.~~

~~(8)~~(6) ~~Calculated~~Determine the power control dynamic range by calculating the difference between the maximum transmit output power measured in step~~s~~ (3) ~~and (4)~~ and the minimum transmit output power measured in step~~s~~ (5)~~(6) and (7)~~.

~~(9)~~(7) Configure the BS transmitter to enable power control steps of 2 dB and of 3 dB, respectively, and repeat steps (2) to (6)~~(8)~~.

6.4.3.5 Test requirements

The power control dynamic range derived according to 6.4.3.4.2 shall be in compliance with the requirements in 6.4.3.2.

3GPP TSG RAN WG4 Meeting #14 **R4-000857**

Sophia, France 13th - 17th November 2000

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CHANGE REQUEST

⌘ **TS 25.142 CR 42** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

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

Title:	⌘	Conformance test description for transmit ON/OFF power
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 13 November 2000
Category:	⌘ **F**	***Release:*** ⌘ R99

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:	⌘	Alignment of the conformance test description for transmit ON/OFF power with recent amendments incorporated into the core specification TS 25.105 via CR 044
Summary of change:	⌘	Introduction of a new subclause 6.5.2 Transmit ON/OFF time mask, and adaptation of the test description to new requirements incorporated into the core specification
Consequences if not approved:	⌘	Inconsistency between the conformance testing specification and the corresponding core specification

Clauses affected:	⌘	6.5
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.

6.5 Transmit ON/OFF power

6.5.1 Transmit OFF power

6.5.1.1 Definition and applicability

The transmit OFF power is the maximum residual output power within the channel bandwidth when the BS does not transmit.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

6.5.1.2 Conformance requirements

The transmit OFF power shall be less than –79 dBm measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll-off α = 0,22 and a bandwidth equal to the chip rate.

The reference for this requirement is TS 25.105 subclause 6.5.1.

6.5.1.3 Test purpose

This test verifies the ability of the BS to reduce its transmit OFF power to a value below the specified limit. This ability is needed to minimize the interference for other users receiving on the same frequency.

6.5.1.4 Method of test

6.5.1.4.1 Initial conditions

The conformance testing of transmit OFF power is included in the conformance testing of transmit ON/OFF time mask; therefore, see subclause 6.5.2.4.1 for initial conditions.

~~(1) Connect the power measuring equipment to the BS antenna connector.~~

~~(2) Set the parameters of the transmitted signal according to table 6.5.4.1.1.~~

~~Table 6.5.4.1.1 Parameters of the transmitted signal for transmit OFF power test~~

~~Parameter~~	~~Value/description~~
~~TDD Duty Cycle~~	~~TS i; i = 0, 1, 2, ..., 14:~~ ~~transmit, if i is even;~~ ~~receive, if i is odd.~~
~~BS output power setting~~	~~PRAT~~
~~Number of DPCH in each active TS~~	~~9~~
~~Power of each DPCH~~	~~1/9 of Base Station output power~~
~~Data content of DPCH~~	~~Real life~~ ~~(sufficient irregular)~~

6.5.1.4.2 Procedure

The conformance testing of transmit OFF power is included in the conformance testing of transmit ON/OFF time mask; therefore, see subclause 6.5.2.4.2 for procedure.

~~(1) Measure the power of the BS output signal chipwise (i.e. averaged over time intervals of one chip duration) over the transmit off power period starting 20 chips before the start of the odd time slots TS i (receive time slots of the BS), and ending 16 chips before the next even time slot (transmit time slot of the BS) starts, and with a measurement filter that has a RRC filter response with a roll off α = 0,22 and a bandwidth equal to the chip rate. If the power measuring equipment is based on signal sampling, the sampling theorem shall be met. In this case, the power is determined by calculating the RMS value of the signal samples taken at the measurement filter output over one chip duration.~~

~~(2) Run steps (1) and (2) for RF channels Low / Mid / High.~~

6.5.1.5 Test requirements

The conformance testing of transmit OFF power is included in the conformance testing of transmit ON/OFF time mask; therefore, see subclause 6.5.2.5 for test requirements.

~~The value of the transmit OFF power derived according to subclause 6.5.4.2, shall be below the limit defined in subclause 6.5.2.~~

6.5.2 Transmit ON/OFF time mask

6.5.2.1 Definition and applicability

The transmit ON/OFF time mask defines the ramping time allowed for the BS between transmit OFF power and transmit ON power.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

6.5.2.2 Conformance requirements

The transmit power level versus time should meet the mask specified in figure 6.5.2.2.1.

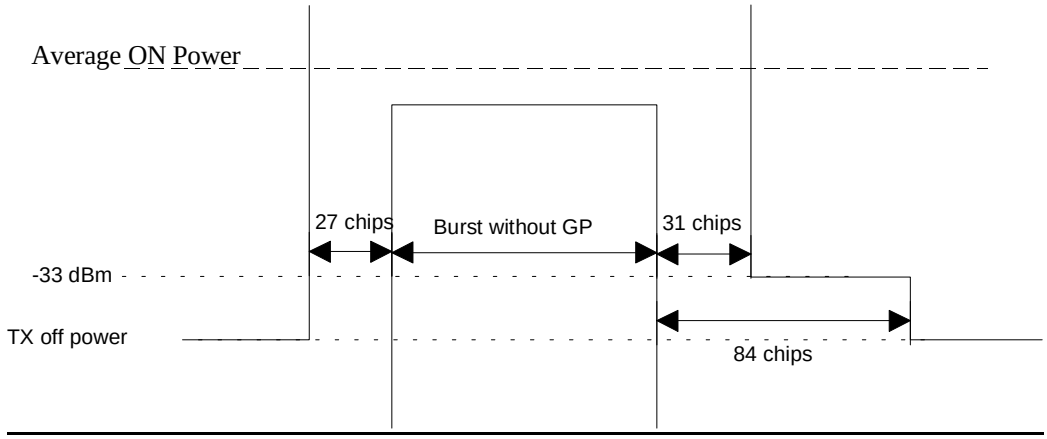

Figure 6.5.2.2.1: Transmit ON/OFF template

The reference for this requirement is TS 25.105 subclause 6.5.2.

6.5.2.3 Test purpose

This test verifies the ability of the BS to reduce its transmit power outside of the active part of the Tx time slot (burst without guard period) to values below specified limits. This ability is needed to minimize the interference for other users receiving on the same frequency.

6.5.2.4 Method of test

6.5.2.4.1 Initial conditions

(1) Connect the power measuring equipment to the BS antenna connector.

(2) Set the parameters of the transmitted signal according to table 6.5.2.4.1.1.

Table 6.5.2.4.1.1: Parameters of the transmitted signal for transmit ON/OFF time mask test

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
BS output power setting	PRAT
Number of DPCH in each active TS	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	Real life (sufficient irregular)

6.5.2.4.2 Procedure

(1) Measure the power of the BS output signal chipwise (i.e. averaged over time intervals of one chip duration) over the period starting 65 chips before the start of the odd time slots TS i (receive time slots of the BS), and ending 27 chips before the next even time slot (transmit time slot of the BS) starts, and with a measurement filter that has a RRC filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate. If the power measuring equipment is based on signal sampling, the sampling theorem shall be met. In this case, the power is determined by calculating the RMS value of the signal samples taken at the measurement filter output over one chip duration.

6.5.2.5 Test requirements

Each value of the power measured according to subclause 6.5.4.2 shall be below the limits defined in figure 6.5.2.2.1 of subclause 6.5.2.2.

3GPP TSG RAN WG4 Meeting #14 **R4-000858**

Sophia, France 13th - 17th November 2000

CR-Form-v3

CHANGE REQUEST

⌘ **TS 25.142 CR 43** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

*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 **X** Core Network ☐

Title:	⌘	Conformance test description for occupied bandwidth
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 13 November 2000
Category:	⌘	**F** ***Release:*** ⌘ R99

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:	⌘	Alignment of the conformance test description for occupied bandwidth with the procedure used in other test specifications (BS FDD, UE FDD and TDD)
Summary of change:	⌘	The procedure for conformance testing is re-formulated in such a way that the occupied bandwidth is explicitly determined.
Consequences if not approved:	⌘	The conformance test description for occupied bandwidth in the case of BS TDD would diverge from the corresponding descriptions in case of BS FDD, UE FDD and TDD.

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

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://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.

6.6.1 Occupied bandwidth

6.6.1.1 Definition and applicability

Occupied bandwidth is a measure of the bandwidth containing 99% of the total integrated power for transmitted spectrum and is centered on the assigned channel frequency.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

6.6.1.2 Conformance requirements

The occupied bandwidth shall be less than 5 MHz based on a chip rate of 3,84 Mcps.

The reference for this requirement is TS 25.105 subclause 6.6.1.

6.6.1.3 Test purpose

The occupied bandwidth, defined in the Radio Regulations of the International Telecommunication Union ITU, is a useful concept for specifying the spectral properties of a given emission in the simplest possible manner; see also Recommendation ITU-R SM.328-9 [7]. The test purpose is to verify that the emission of the BS does not occupy an excessive bandwidth for the service to be provided and is, therefore, not likely to create interference to other users of the spectrum beyond undue limits.

6.6.1.4 Method of test

6.6.1.4.1 Initial conditions

(1) Connect the measuring equipment to the antenna connector of the BS under test.

(2) Set the parameters of the BS transmitted signal according to table 6.6.1.4.1.1.

Table 6.6.1.4.1.1: Parameters of the BS transmitted signal for occupied bandwidth testing

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
BS output power setting	PRAT
Number of DPCH in each active TS	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	Real life (sufficient irregular)

6.6.1.4.2 Procedure

(1) Measure the power of the transmitted signal with a measurement filter of bandwidth 30 kHz. The characteristic of the filter shall be approximately Gaussian (typical spectrum analyzer filter). The centre frequency of the filter shall be stepped in contiguous 30 kHz steps from a minimum frequency, which shall be (7,5 – 0,015) MHz below the assigned channel frequency of the transmitted signal, up to a maximum frequency, which shall be (7,5 – 0,015) MHz above the assigned channel frequency of the transmitted signal. The time duration of each step shall be sufficiently long to capture one active time slot. The measured power shall be recorded for each step.

~~(2)Determine the transmitted power within the assigned channel bandwidth by accumulating the recorded power measurements results of all steps with center frequencies from (2,5 – 0,015) MHz below the assigned channel frequency up to (2,5 – 0,015) MHz above the assigned channel frequency.~~

~~(3)~~(2) Determine the total transmitted power by accumulating the recorded power measurement~~s~~ results of all steps.

~~(4) Calculate the ratio~~

~~transmitted power within the assigned channel bandwidth acc. to (2) / total transmitted power acc. to (3).~~

(3) Sum up the recorded power measurement results, starting from the step at the minimum frequency defined in (1) up to the step at a lower limit frequency by which this sum is equal to or greater than 0.5 % of the total power determined in (2). This limit frequency is recorded as "Lower Frequency".

(4) Sum up the recorded power measurement results, starting from the step at the maximum frequency defined in (1) down to the step at an upper limit frequency by which this sum is equal to or greater than 0.5 % of the total power determined in (2). This limit frequency is recorded as "Upper Frequency".

(5) Calculate the occupied bandwidth as the difference between the "Upper Frequency" obtained in (3) and the "Lower Frequency" obtained in (4).

6.6.1.5 Test requirements

The ~~ratio~~occupied bandwidth calculated in step (5~~4~~) of subclause 6.6.1.4.2 shall be ~~0,99 or greater~~less than 5 MHz.

3GPP TSG RAN WG4 Meeting #14 **R4-000859**

Sophia, France 13th - 17th November 2000

CR-Form-v3

CHANGE REQUEST

⌘ **TS 25.142 CR 44** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

*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 **X** Core Network ☐

Title:	⌘	Conformance test description for performance requirements
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 13 November 2000
Category:	⌘ **F**	***Release:*** ⌘ R99

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:	⌘	Alignment of the conformance test description for performance requirements with recent amendments incorporated into the core specification TS 25.105 via CR 042 (consideration of TFCI decoding)
Summary of change:	⌘	Introduction of a reference to TFCS size 16 into the conformance requirements
Consequences if not approved:	⌘	Inconsistency between the conformance testing specification and the corresponding core specification

Clauses affected:	⌘	8.2.1.2, 8.3.1.2, 8.3.2.2, 8.3.3.2
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

8.2.1.1 Definition and applicability

The performance requirement of DCH in static propagation conditions is determined by the maximum Block Error Ratio (BLER) allowed when the receiver input signal is at a specified $\hat{I}_{or}/I_{oc}$ limit. The BLER is calculated for each of the measurement channels supported by the base station.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

8.2.1.2 Conformance requirements

For the parameters specified in table 8.2.1.2.1, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.2.1.2.2. These requirements are applicable for TFCS size 16.

8.3 Demodulation of DCH in multipath fading conditions

8.3.1 Multipath fading Case 1

8.3.1.1 Definition and applicability

The performance requirement of DCH in multipath fading Case 1 is determined by the maximum Block Error Ratio (BLER) allowed when the receiver input signal is at a specified $\hat{I}_{or}/I_{oc}$ limit. The BLER is calculated for each of the measurement channels supported by the base station.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

8.3.1.2 Conformance requirements

For the parameters specified in table 8.3.1.2.1, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.3.1.2.2. These requirements are applicable for TFCS size 16.

8.3.2 Multipath fading Case 2

8.3.2.1 Definition and applicability

The performance requirement of DCH in multipath fading Case 2 is determined by the maximum Block Error Ratio (BLER) allowed when the receiver input signal is at a specified $\hat{I}_{or}/I_{oc}$ limit. The BLER is calculated for each of the measurement channels supported by the base station.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

8.3.2.2 Conformance requirements

For the parameters specified in table 8.3.2.2.1, the BLER should not exceed the piece-wise linear BLER curve specified in table 8.3.2.2.2. These requirements are applicable for TFCS size 16.

8.3.3 Multipath fading Case 3

8.3.3.1 Definition and applicability

The performance requirement of DCH in multipath fading Case 3 is determined by the maximum Block Error Ratio (BLER) allowed when the receiver input signal is at a specified $\hat{I}_{or}/I_{oc}$ limit. The BLER is calculated for each of the measurement channels supported by the base station.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

8.3.3.2 Conformance requirements

For the parameters specified in table 8.3.3.2.1, the BLER should not exceed the piece-wise linear BLER curve specified in Table 8.3.3.2.2. These requirements are applicable for TFCS size 16.

3GPP TSG RAN WG4 Meeting #14 **R4-000965**

Sophia, France 13th - 17th November 2000

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CHANGE REQUEST

⌘ **25.142 CR 45** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

*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:	⌘	Editorial correction to ACLR test
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 17.11.00
Category:	⌘	**F** ***Release:*** ⌘ R99

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:	⌘	Duplication of two paragraphs
Summary of change:	⌘	Delete duplicated paragraphs
Consequences if not approved:	⌘	Impact on harmonized standards to be drafted by ETSI MSG TFES

Clauses affected:	⌘	6.6.2.2.1, 6.6.2.2.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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://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.

Table 6.6.2.1.4.1.1: Parameters of the BS transmitted signal for spectrum emission mask testing

Parameter	Value/description
TDD Duty Cycle	TS i; i = 0, 1, 2, ..., 14: transmit, if i is even; receive, if i is odd.
BS output power setting	PRAT
Number of DPCH in each active TS	9
Power of each DPCH	1/9 of Base Station output power
Data content of DPCH	real life (sufficient irregular)

6.6.2.1.4.2 Procedure

Measure the power of the BS spectrum emissions by applying measurement filters with bandwidths as specified in the relevant table in subclause 6.6.2.1.2. The characteristic of the filters shall be approximately Gaussian (typical spectrum analyzer filters). The center frequency of the filter shall be stepped in contiguous steps over the frequency bands as given in the tables. The step width shall be equal to the respective measurement bandwidth. The time duration of each step shall be sufficiently long to capture one active time slot.

For frequency offsets of the measurement filter centre frequency in the range 4,0 MHz ≤ f_offset < 8,0 MHz, the measurement shall be performed by applying filters with measurement bandwidth of 50 kHz or less and integrating the measured results over the nominal measurement bandwidth 1 MHz specified in the tables in subclause 6.6.2.1.2.1.

6.6.2.1.5 Test requirements

The spectrum emissions measured according to subclause 6.6.2.1.4.2 shall be within the mask defined in the relevant table of subclause 6.6.2.1.2.

6.6.2.2 Adjacent Channel Leakage power Ratio (ACLR)

6.6.2.2.1 Definition and applicability

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the transmitted power to the power measured in an adjacent channel. Both the transmitted and the adjacent channel power are measured through a matched filter (root raised cosine and roll-off 0,22) with a noise power bandwidth equal to the chip rate. The requirements shall apply for all configurations of BS (single carrier or multi-carrier), and for all operating modes foreseen by the manufacturer's specification.

The requirements in this subclause shall apply to base stations intended for general-purpose applications.

6.6.2.2.2 Conformance requirements

~~6.6.2.2.1 Definition and applicability~~

~~Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the transmitted power to the power measured after a receive filter in the adjacent channel(s). Both the transmitted and the received power are measured through a matched filter (root raised cosine and roll-off 0,22) with a noise power bandwidth equal to the chip rate.~~

~~The requirements in this subclause shall apply to base stations intended for general-purpose applications.~~

~~6.6.2.2.2 Conformance requirements~~

6.6.2.2.2.1 Minimum requirement

The ACLR shall be equal to or greater than the limits given in Table 6.6.2.2.2.1.1.

3GPP TSG RAN WG4 Meeting #14 **R4-000967**

Sophia, France 13th - 17th November 2000

CR-Form-v3

CHANGE REQUEST

⌘ **25.142** **CR** **46** ⌘ rev **-** ⌘ Current version: **3.3.0** ⌘

*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 to reference measurement channels
Source:	⌘	RAN WG4
Work item code:	⌘	***Date:*** ⌘ 14.11.2000
Category:	⌘	**F** ***Release:*** ⌘ R99

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:

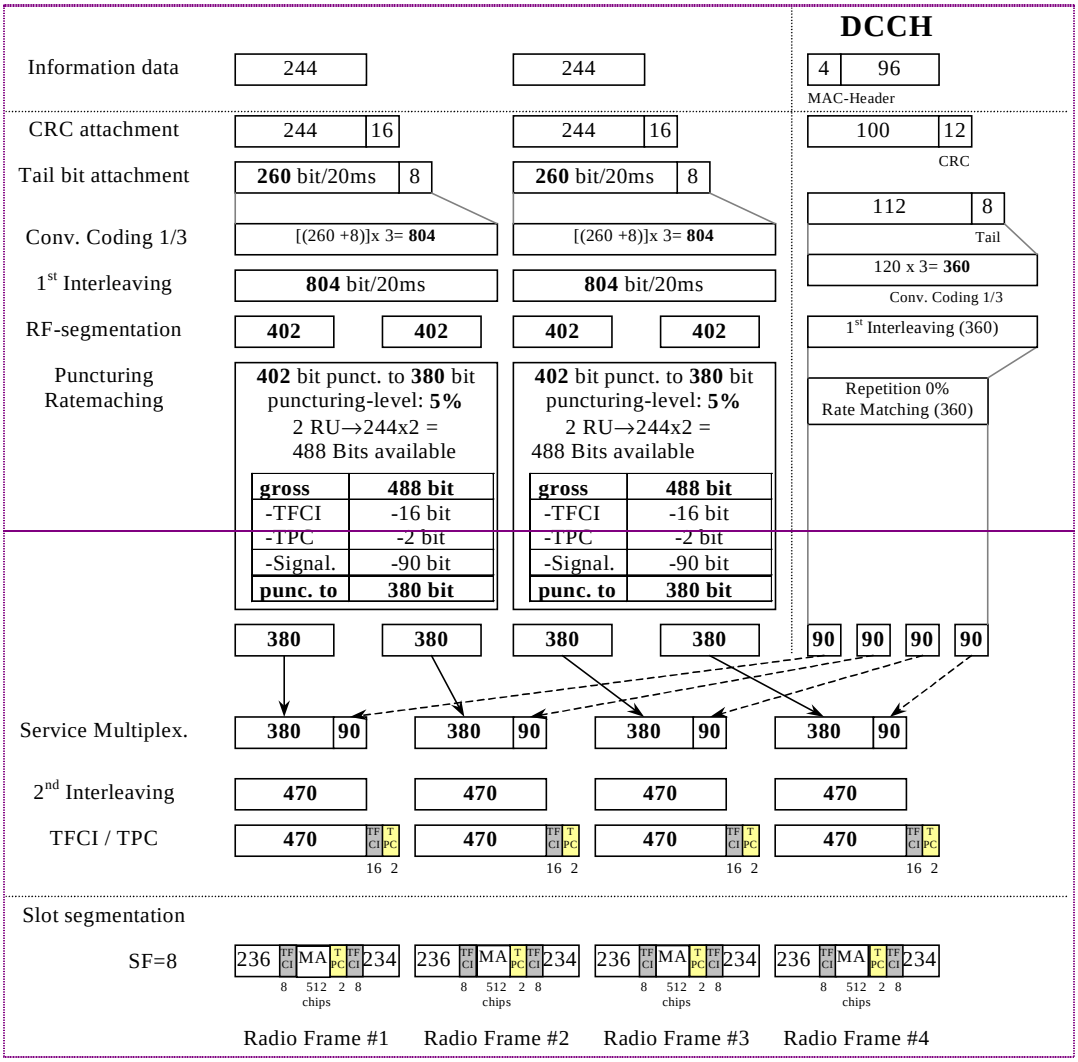
2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

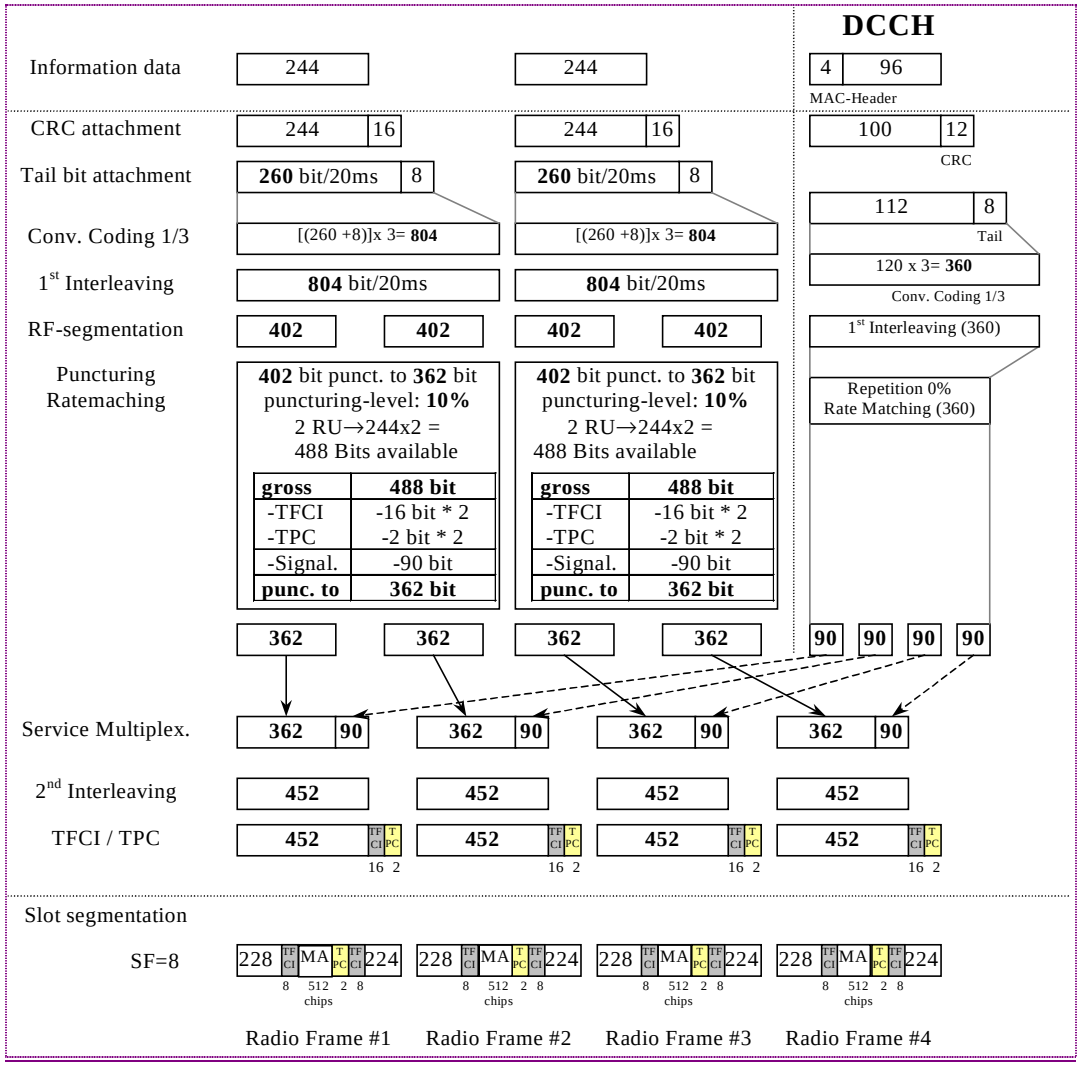
Reason for change:	⌘	To reflect a correction in the RAN WG1 specifications.
Summary of change:	⌘	The spreading factor for TFCI and TPC bits is changed to 16.
Consequences if not approved:	⌘	The reference measurement channels are not supported by the base station.

Clauses affected:	⌘	Annex A 2.1; Annex A 2.4		
Other specs Affected:	⌘	☒ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	CR221-034
Other comments:	⌘			

A.2.1 UL reference measurement channel (12.2 kbps)

Parameter	
Information data rate	12.2 kbps
RU´s allocated	2 RU
Midamble	**512** chips
Interleaving	20 ms
Power control	2 Bit/user
TFCI	16 Bit/user
Inband signalling DCCH	2 kbps
Puncturing level at Code rate 1/3 : DCH / DCCH	105% / 0%

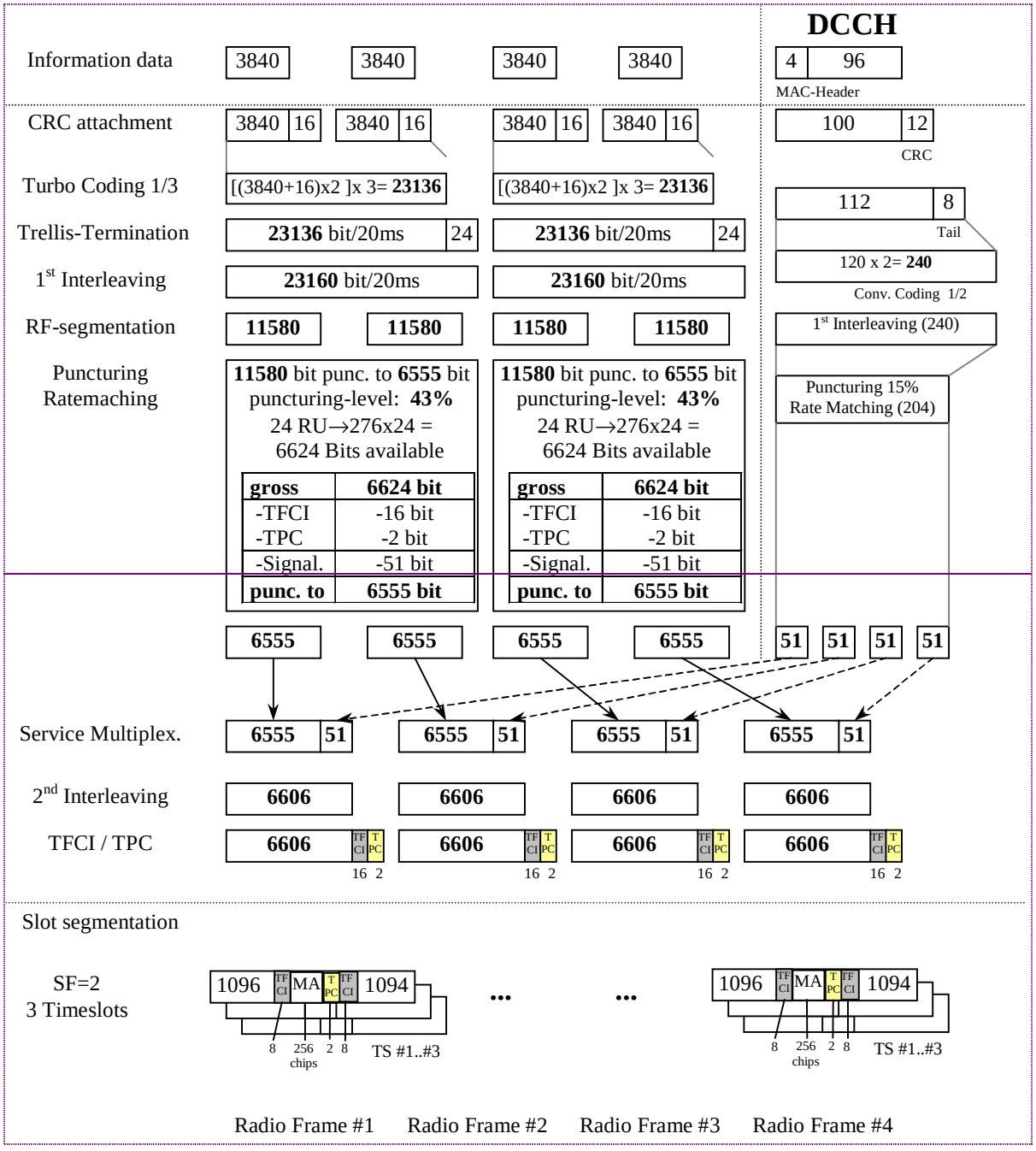


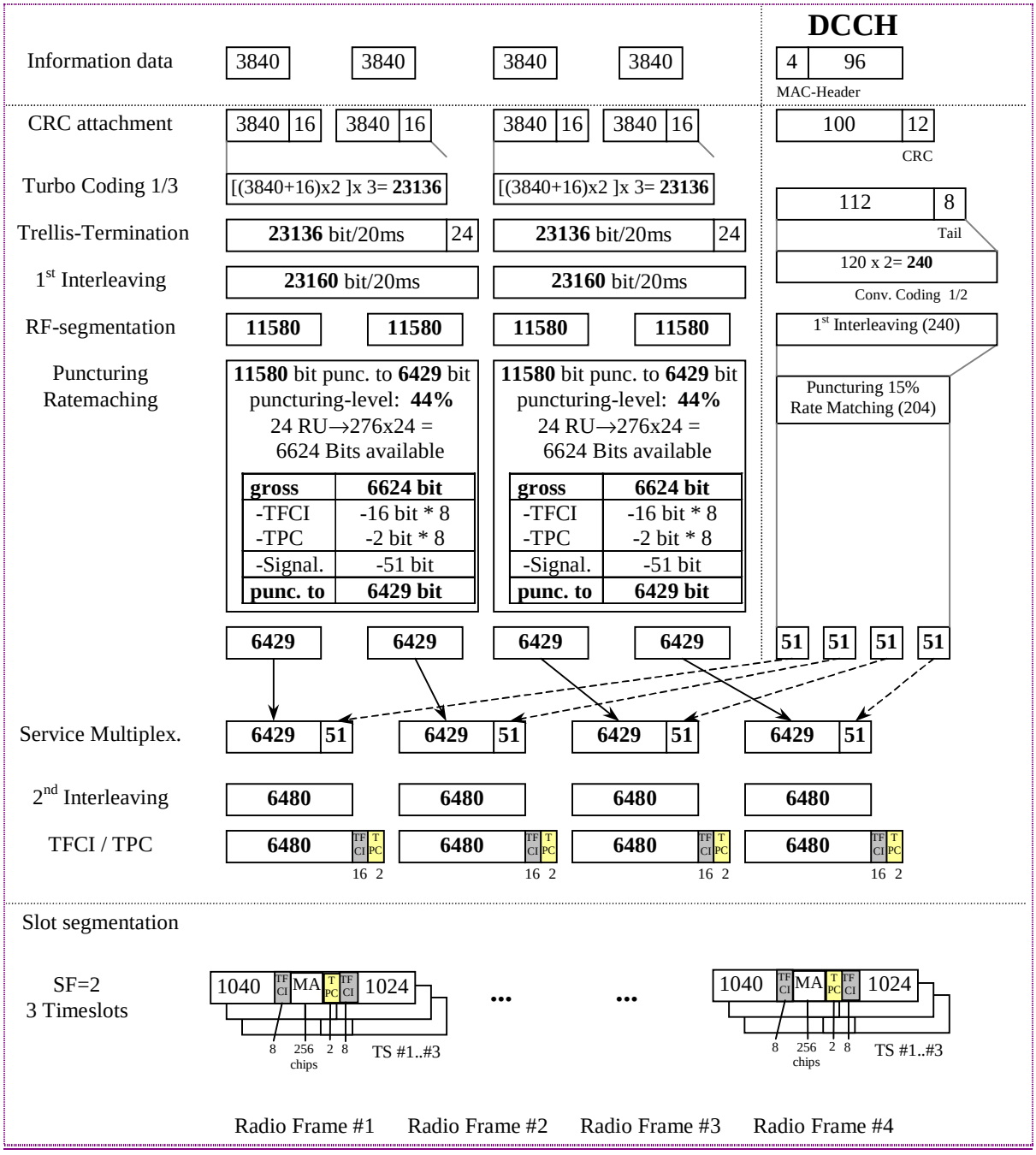

DCCH
Information data
244
244
4
96
MAC-Header
CRC attachment
244
16
244
16
100
12
CRC
Tail bit attachment
260 bit/20ms
8
260 bit/20ms
8
112
8
Tail
Conv. Coding 1/3
[(260 +8)]x 3= 804
[(260 +8)]x 3= 804
120 x 3= 360
Conv. Coding 1/3
1st Interleaving
804 bit/20ms
804 bit/20ms
RF-segmentation
402
402
402
402
1st Interleaving (360)
Puncturing
Ratematching
402 bit punct. to 362 bit puncturing-level: 10%
2 RU→244x2 = 488 Bits available
gross 488 bit
-TFCI -16 bit * 2
-TPC -2 bit * 2
-Signal. -90 bit
punc. to 362 bit
402 bit punct. to 362 bit puncturing-level: 10%
2 RU→244x2 = 488 Bits available
gross 488 bit
-TFCI -16 bit * 2
-TPC -2 bit * 2
-Signal. -90 bit
punc. to 362 bit
Repetition 0%
Rate Matching (360)
362
362
362
362
90
90
90
90
Service Multiplex.
362
90
362
90
362
90
362
90
2nd Interleaving
452
452
452
452
TFCI / TPC
452
452
452
452
TFCI
TPC
16 2
Slot segmentation
SF=8
228
TFCI
MA
TPC
TFCI
224
8 512 2 8
chips
Radio Frame #1
Radio Frame #2
Radio Frame #3
Radio Frame #4

-- NEXT CHANGED SECTION ---

A.2.4 UL reference measurement channel (384 kbps)

Parameter	
Information data rate	384 kbps
RU´s allocated	8*3TS = 24RU
Midamble	256 chips
Interleaving	20 ms
Power control	2 Bit/user
TFCI	16 Bit/user
Inband signalling DCCH	2 kbps
Puncturing level at Code rate : 1/3 DCH / ½ DCCH	443.4% / 15.3%




DCCH
Information data
3840
3840
3840
3840
4
96
MAC-Header
CRC attachment
3840 16
3840 16
3840 16
3840 16
100
12
CRC
Turbo Coding 1/3
[(3840+16)x2]x 3= 23136
[(3840+16)x2]x 3= 23136
112
8
Tail
Trellis-Termination
23136 bit/20ms
24
23136 bit/20ms
24
120 x 2= 240
Conv. Coding 1/2
1st Interleaving
23160 bit/20ms
23160 bit/20ms
RF-segmentation
11580
11580
11580
11580
1st Interleaving (240)
Puncturing
Ratemaching
11580 bit punc. to 6429 bit
puncturing-level: 44%
24 RU→276x24 =
6624 Bits available
11580 bit punc. to 6429 bit
puncturing-level: 44%
24 RU→276x24 =
6624 Bits available
Puncturing 15%
Rate Matching (204)
gross 6624 bit
-TFCI -16 bit * 8
-TPC -2 bit * 8
-Signal. -51 bit
punc. to 6429 bit
6429
6429
6429
6429
51
51
51
51
Service Multiplex.
6429 51
6429 51
6429 51
6429 51
2nd Interleaving
6480
6480
6480
6480
TFCI / TPC
6480 TFCI TPC
16 2
Slot segmentation
SF=2
3 Timeslots
1040 TFCI MA TPC TFCI 1024
8 256 chips 2 8 TS #1..#3
Radio Frame #1
Radio Frame #2
Radio Frame #3
Radio Frame #4