TSG RAN Meeting #23 **RP-040042**
Phoenix, US, 10 - 12 March 2004

Title **CRs (Rel-6) to TS25.101, TS25.123, TS25.133 and TS25.141 for small enhancements and improvements**
Source **TSG RAN WG4**
Agenda Item **8.9**

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-040032	25.101	325		F	Rel-6	6.3.0	Additional spurious emission requirements for Bands II and V to protect 1.7/2.1 GHz	TEI6
R4-040050	25.101	326		F	Rel-6	6.3.0	Additional spurious emission requirements for Band I to protect UMTS800	TEI6
R4-040074	25.101	329	1	F	Rel-6	6.3.0	Clarification to Power on/off time mask diagram	TEI6
R4-040141	25.123	339	1	F	Rel-6	6.0.0	Some correction to GSM reselection in CELL_FACH for 1.28Mcps TDD	LCRTDD-RF
R4-040155	25.133	647	1	F	Rel-6	6.4.0	Clarify measurement control for FDD/FDD Inter-frequency Hard Handover test case	TEI6
R4-040072	25.141	341		B	Rel-6	6.4.0	Introduction of DCH performance test requirements for BS without Rx diversity	TEI6

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040032**

Munich, Germany 9 - 13 February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **25.101** **CR** **325** ⌘ **rev** ⌘ Current version: **6.3.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Additional spurious emission requirements for Bands II and V to protect 1.7/2.1 GHz
Source:	⌘	RAN WG4
Work item code:	⌘	TEI6
Date:	⌘	23/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Introduction of additional spurious emission requirements for Band II and band V transmitter and receiver to protect UMTS1.7/2.1 GHz
Summary of change:	⌘	Additional spurious emissions requirements for Band II and Band V transmitter and receiver have been introduced in order to provide sufficient protection for UMTS1.7/2.1 GHz
Consequences if not approved:	⌘	Additional spurious emissions requirements for Band II and Band V transmitter and receiver to provide sufficient protection for UMTS1.7/2.1 GHz are missing

Clauses affected:	⌘	6.6.3, 7.9.1			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	TS34.121
		X /	Test specifications		
		/ **X**	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://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 reques

6 Transmitter characteristics

---NEXT MODIFIED SECTION---

6.6.3 Spurious emissions

Spurious emissions are emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermodulation products and frequency conversion products, but exclude out of band emissions.

The frequency boundary and the detailed transitions of the limits between the requirement for out band emissions and spectrum emissions are based on ITU-R Recommendations SM.329 [2].

6.6.3.1 Minimum requirement

These requirements are only applicable for frequencies, which are greater than 12.5 MHz away from the UE centre carrier frequency.

Table 6.12: General spurious emissions requirements

Frequency Bandwidth	Measurement Bandwidth	Minimum requirement
9 kHz ≤ f < 150 kHz	1 kHz	-36 dBm
150 kHz ≤ f < 30 MHz	10 kHz	-36 dBm
30 MHz ≤ f < 1000 MHz	100 kHz	-36 dBm
1 GHz ≤ f < 12.75 GHz	1 MHz	-30 dBm

Table 6.13: Additional spurious emissions requirements

Operating Band	Frequency Bandwidth	Measurement Bandwidth	Minimum requirement
I	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm *
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm *
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm *
	1805 MHz ≤ f ≤ 1880 MHz	100 kHz	-71 dBm *
	1893.5 MHz <f<1919.6 MHz	300 kHz	-41 dBm
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm
II	869 MHz ≤ f ≤ 894 MHz	3.84 MHz	-60 dBm
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm
	2110 MHz ≤ f ≤ 2155 MHz	3.84 MHz	-60 dBm
III	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm *
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm *
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm *
	1805 MHz ≤ f ≤ 1880 MHz	3.84 MHz	-60 dBm
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm
V	869 MHz ≤ f ≤ 894 MHz	3.84 MHz	-60 dBm
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm
	2110 MHz ≤ f ≤ 2155 MHz	3.84 MHz	-60 dBm
VI	875 MHz ≤ f ≤ 885 MHz	3.84 MHz	-60dBm
	1893.5 MHz ≤ f ≤1919.6 MHz	300 kHz	-41 dBm
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm
Note *	The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in Table 6.12 are permitted for each UARFCN used in the measurement		

---NEXT MODIFIED SECTION---

7 Receiver characteristics

---NEXT MODIFIED SECTION---

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

The power of any narrow band CW spurious emission shall not exceed the maximum level specified in Table 7.10 and Table 7.11

Table 7.10: General receiver spurious emission requirements

Frequency Band	Measurement Bandwidth	Maximum level	Note
30MHz ≤ f < 1GHz	100 kHz	-57 dBm	
1GHz ≤ f ≤ 12.75 GHz	1 MHz	-47 dBm	

Table 7.11: Additional receiver spurious emission requirements

Band	Frequency Band	Measurement Bandwidth	Maximum level	Note
I	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm *	
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm *	
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm *	
	1805 MHz ≤ f ≤ 1880 MHz	100 kHz	-71 dBm *	
	1920 MHz ≤ f ≤ 1980 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	UE receive band
II	869 MHz ≤ f < 894 MHz	3.84 MHz	-60 dBm	
	1850 MHz ≤ f ≤ 1910 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm	UE receive band
	2110 MHz ≤ f ≤ 2155 MHz	3.84 MHz	-60 dBm	
III	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm*	
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm*	
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm*	
	1710 MHz ≤ f ≤ 1785 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	1805 MHz ≤ f ≤ 1880 MHz	3.84 MHz	-60 dBm	UE receive band
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	
V	824 MHz ≤ f < 849 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	869 MHz ≤ f < 894 MHz	3.84 MHz	-60 dBm	UE receive band
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm	
	2110 MHz ≤ f ≤ 2155 MHz	3.84 MHz	-60 dBm	
VI	830 MHz ≤ f ≤ 840 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	875 MHz ≤ f ≤ 885 MHz	3.84 MHz	-60 dBm	UE receive band
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	
Note *	The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in Table 7.10 are permitted for each UARFCN used in the measurement			

3GPP TSG RAN WG4 (Radio) Meeting #30 R4-040050

Munich, Germany 9 - 13 February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **25.101** **CR** **326** ⌘ **rev** ⌘ Current version: **6.3.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Additional spurious emission requirements for Band I to protect UMTS800
Source:	⌘	RAN WG4
Work item code:	⌘	TEI6
Date:	⌘	23/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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)*
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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Introduction of additional spurious emission requirements for Band I transmitter and reciver to protect UMTS800.
Summary of change:	⌘	Additional spurious emissions requirements for Band I transmitter and receiver have been introduced in order to provide sufficient protection for UMTS800.
Consequences if not approved:	⌘	Additional spurious emissions requirements for Band I transmitter and receiver to provide sufficient protection for UMTS 800 are missing.

Clauses affected:	⌘	6.6.3, 7.9.1

	Y	N			
Other specs Affected:		X	Other core specifications	⌘	
	X		Test specifications		TS 34.121
		X	O&M Specifications		

Other comments:	⌘	

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6.6.3 Spurious emissions

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The frequency boundary and the detailed transitions of the limits between the requirement for out band emissions and spectrum emissions are based on ITU-R Recommendations SM.329 [2].

6.6.3.1 Minimum requirement

These requirements are only applicable for frequencies, which are greater than 12.5 MHz away from the UE centre carrier frequency.

Table 6.12: General spurious emissions requirements

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Table 6.13: Additional spurious emissions requirements

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	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm *
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	1893.5 MHz <f<1919.6 MHz	300 kHz	-41 dBm
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm
II	869 MHz ≤ f ≤ 894 MHz	3.84 MHz	-60 dBm
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm
III	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm *
	925 MHz ≤ f ≤ 935 MHz	100 kHz	-67 dBm *
	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm *
	1805 MHz ≤ f ≤ 1880 MHz	3.84 MHz	-60 dBm
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm
V	869 MHz ≤ f ≤ 894 MHz	3.84 MHz	-60 dBm
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm
VI	875 MHz ≤ f ≤ 885 MHz	3.84 MHz	-60dBm
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	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm
Note * The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in Table 6.12 are permitted for each UARFCN used in the measurement			

---NEXT MODIFIED SECTION---

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

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Table 7.10: General receiver spurious emission requirements

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	1920 MHz ≤ f ≤ 1980 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	UE receive band
II	869 MHz ≤ f ≤ 894 MHz	3.84 MHz	-60 dBm	
	1850 MHz ≤ f ≤ 1910 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm	UE receive band
III	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm*	
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	935 MHz < f ≤ 960 MHz	100 kHz	-79 dBm*	
	1710 MHz ≤ f ≤ 1785 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	1805 MHz ≤ f ≤ 1880 MHz	3.84 MHz	-60 dBm	UE receive band
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	
V	824 MHz ≤ f ≤ 849 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	869 MHz ≤ f < 894 MHz	3.84 MHz	-60 dBm	UE receive band
	1930 MHz ≤ f ≤ 1990 MHz	3.84 MHz	-60 dBm	
VI	830 MHz ≤ f ≤ 840 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	875 MHz ≤ f ≤ 885 MHz	3.84 MHz	-60 dBm	UE receive band
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	
Note *	The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in Table 7.10 are permitted for each UARFCN used in the measurement			

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040074**

Munich, Germany 9 - 13 February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **25.101** **CR** **329** ⌘ **rev** **1** ⌘ Current version: **6.3.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Clarification to Power on/off time mask diagram
Source:	⌘	RAN WG4
Work item code:	⌘	TEI6
Date:	⌘	23/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The diagrams for the Power on/off time mask have caused confusion due to the implication that there is a maximum and minimum mask power requirement. There is also some ambiguous text clarified, specifically with respect to the off power requirements for compressed mode, which are first excluded then given as an off power example.
Summary of change:	⌘	The diagrams and accompanying text are modified to show the correct relationship between the nominal bursts and the on and off power requirements
Consequences if not approved:	⌘	Confusion over the definition of the UE power vs. time profile may lead to incorrect implementation and tests.

Clauses affected:	⌘	6.5			
Other specs affected:	⌘	Y / N	Other core specifications	⌘	
		N / X	Other core specifications		
		X /	Test specifications		34.121
		/ X	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

Transmit OFF power is defined as the RRC filtered mean power when the transmitter is off. ~~The transmit OFF power state is when the UE does not transmit except during UL compressed mode.~~ The transmitter is considered to be off when the UE is not allowed to transmit. During UL compressed mode gaps, the UE is not considered to be off.

6.5.1.1 Minimum requirement

The transmit OFF power is defined as the RRC filtered mean power in a duration of at least one timeslot excluding any transient periods. The requirement for the transmit OFF power shall be less than –56 dBm.

6.5.2 Transmit ON/OFF Time mask

The time mask for transmit ON/OFF defines the ~~ramping time~~ transient period allowed for the UE between transmit OFF power and transmit ON power. During the transient period there are no additional requirements on UE transmit power beyond what is required in subclause 6.2 maximum output power observed over a period of at least one timeslot. ~~Possible~~ ON/OFF scenarios ~~are RACH ,CPCH or UL compressed mode~~include PRACH/PCPCH preamble bursts, the beginning or end of PRACH/PCPCH message parts and the beginning or end of UL DPCH transmissions.

6.5.2.1 Minimum requirement

The transmit power levels versus time shall meet the ~~mask specified~~ requirements in figure 6.2 for PRACH preambles and CPCH preambles, and the ~~mask~~ requirements in figure 6.3 for all other cases. The off ~~signal~~ power observation period is defined as the RRC filtered mean power in a duration of at least one timeslot excluding any transient periods. The on ~~signal~~ power observation period is defined as the mean power over one timeslot excluding any transient periods. For PRACH/PCPCH preambles, the on power observation period is 3904 chips (4096 chips less the transient periods).

The off power specification in figures 6.2 and 6.3 is as defined in 6.5.1.1.

The average on power specification in figures 6.2 and 6.3 depends on each possible case.

- First preamble of RACH/CPCH: Open loop accuracy (Table 6.3).
- During preamble ramping of the RACH/CPCH, and between final RACH/CPCH preamble and RACH/CPCH message part: Accuracy depending on size of the required power difference.(Table 6.7). The step in total transmitted power between final RACH/CPCH preamble and RACH/CPCH message (control part + data part) shall be rounded to the closest integer dB value. A power step exactly half-way between two integer values shall be rounded to the closest integer of greater magnitude.
- After transmission gaps in compressed mode: Accuracy as in Table 6.9.
- Power step to Maximum Power: Maximum power accuracy (Table 6.1).

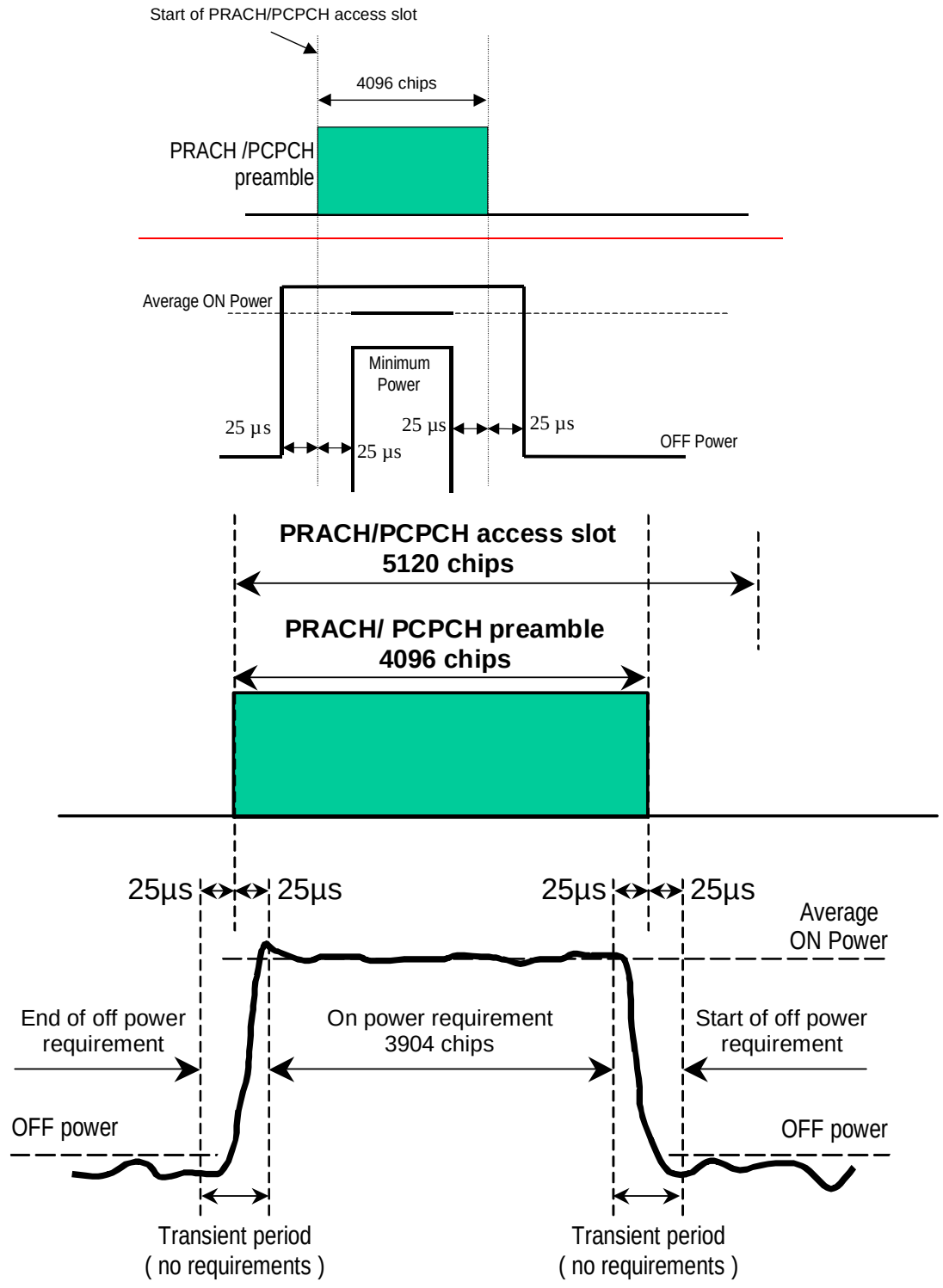

Figure 6.2: Transmit ON/OFF template for PRACH preambles and CPCH preambles

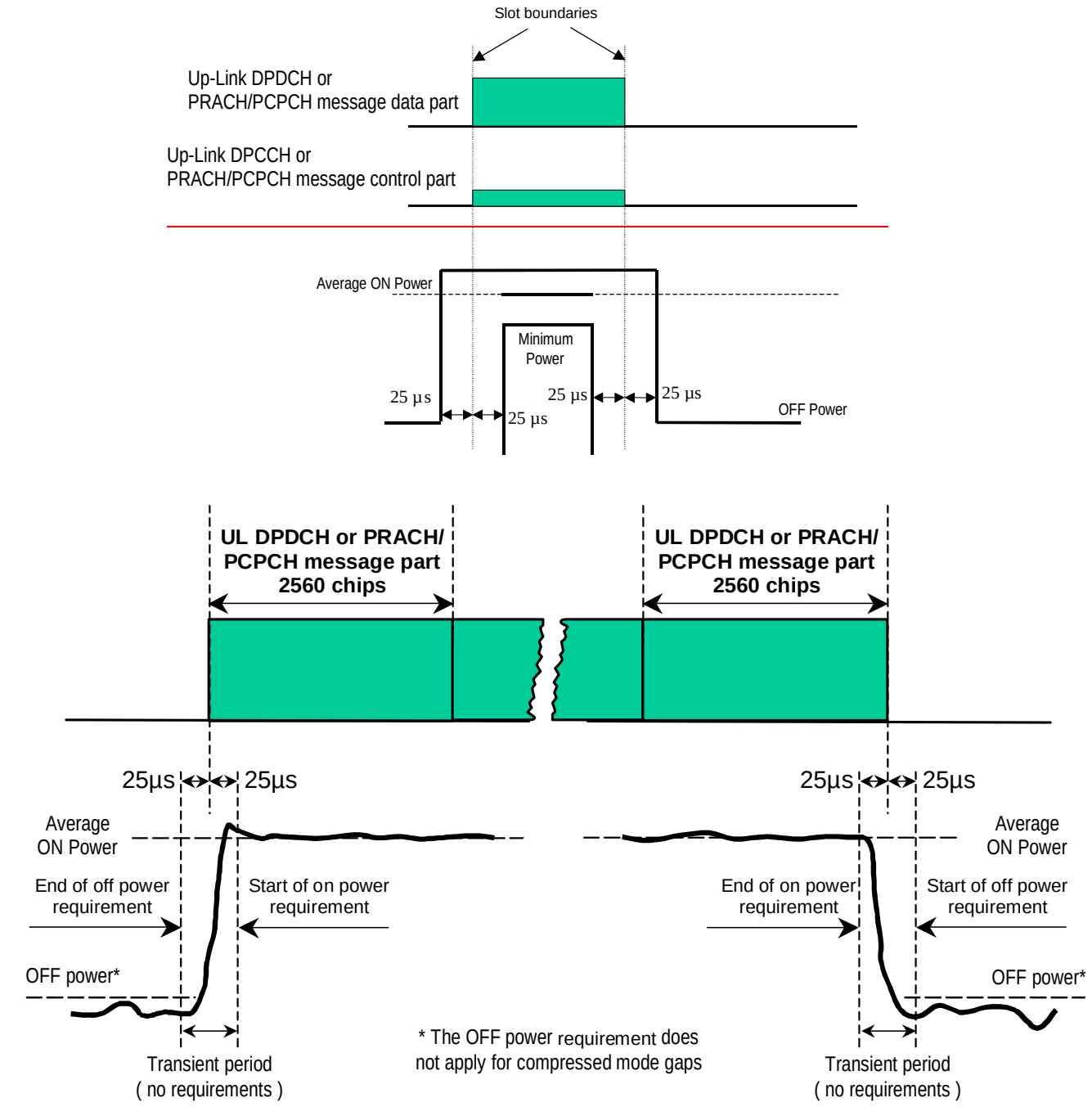

Figure 6.3: Transmit ON/OFF template for all other On/Off cases

Table 6.7: Transmitter power difference tolerance for RACH/CPCH preamble ramping, and between final RACH/CPCH preamble and RACH/CPCH message part

Power step size (Up or down)* ΔP [dB]	Transmitter power difference tolerance [dB]
0	+/- 1
1	+/- 1
2	+/- 1.5
3	+/- 2
4 ≤ Δ P ≤10	+/- 2.5
11 ≤ Δ P ≤15	+/- 3.5
16 ≤ Δ P ≤20	+/- 4.5
21 ≤ Δ P	+/- 6.5

NOTE: Power step size for RACH/CPCH preamble ramping is from 1 to 8 dB with 1 dB steps.

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040141**

Munich, Germany 9 - 13 February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **25.123** **CR** **339** ⌘ **rev** **1** ⌘ Current version: **6.0.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Some correction to GSM reselection in CELL_FACH for 1.28Mcps TDD
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	23/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	According to the exist reference the parameters in GSM re-selection in CELL_FACH for 1.28Mcps TDD isn't found so that the performance requirement can't be derived. So the reference need to be corrected.
Summary of change:	⌘	Reference is corrected for the parameter $T_{identify\ GSM}$ in GSM re-selection in CELL_FACH for 1.28Mcps TDD. The reference for parameter T_{meas} is specifed.
Consequences if not approved:	⌘	The parameters in GSM re-selection in CELL_FACH for 1.28Mcps TDD isn't found according to the exist reference, so the performance requirement can't be derived.

Clauses affected:	⌘	5.4.3.2.4

Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘
		☐	Test specifications	34.122
		☐	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://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.

5.4.3.2.4 Inter-RAT cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

The cell re-selection delay in CELL_FACH state to an inter-RAT cell shall be less than:

$$T_{reselection,GSM} = T_{identify\ GSM} + T_{measurement\ GSM} + 40 + T_{BCCH} + T_{RA}\ \text{ms}$$

T_{RA} = The additional delay caused by the random access procedure.

T_{BCCH} = The maximum time allowed to read BCCH data from GSM cell [21].

where

a) For UE requiring idle intervals or measurement occasions:

$T_{identify\ GSM}$ is equal to $T_{identify\ abort}$ as specified in ~~TS25.225 Annex A.~~ 8.4A.2.5.2.1

$T_{Measurement\ GSM}$ is the worst case time for measuring one previously identified GSM carrier.

$$T_{measurement\ GSM} = Max\left\{8 \cdot \frac{N_{carriers}}{N_{GSM\ carrier\ RSSI}} \cdot T_{meas}, 480ms\right\}$$

where

$N_{carriers}$ is the number of GSM carriers in the Inter-RAT cell info list

$N_{GSM\ carrier\ RSSI}$ is specified in section 8.4A.2.5.1.

T_{meas} is specified in section 8.4A.2.1.

b)For UE not requiring idle intervals ~~or~~ and measurement occasions

$T_{identify,\ GSM}$ = 150 ms

$T_{Measurement,\ GSM}$ = 480 ms

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040155**

Munich, Germany 9 - 13 February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **25.133** **CR** **647** ⌘ **rev** **1** ⌘ Current version: **6.4.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Clarify measurement control for FDD/FDD Inter-frequency Hard Handover test case
Source:	⌘	RAN WG4
Work item code:	⌘	TEI6
Date:	⌘	23/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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)
Rel-6 (Release 6)

Reason for change:	⌘	Clarify measurement control for FDD/FDD Inter-frequency Hard Handover test case by removing measurement control for Event 1A and related parameters because Event 1A is not used in this test case.
Summary of change:	⌘	Clarify measurement control for FDD/FDD Inter-frequency Hard Handover test case: A.5.2.2.1: Measurement control for Event 1A and related parameters are removed.
Consequences if not approved:	⌘	Test parameters defined which are not used in the test and could cause confusion during test implementation. Core specification not aligned with test specification.

Clauses affected:	⌘	A.5.2.2.1			
Other specs affected:	⌘	Y / N		⌘	
		N: X	Other core specifications		
		Y: X	Test specifications		34.121
		N: X	O&M Specifications		
Other comments:	⌘				

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A.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter frequency hard handover delay in CELL_DCH state as specified in section 5.2.2.1.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with ~~Event 1A and~~ Event 2C shall be used. The CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time ”now” with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16].

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL and UL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1 and A.2.1
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Compressed mode			A.22 set 1	As specified in TS 25.101 section A.5.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold non used frequency		dB	-18	Absolute Ec/I0 threshold for event 2C
~~Reporting range~~		~~dB~~	~~4~~	~~Applicable for event 1A~~
Hysteresis		dB	0	
~~W~~			~~1~~	~~Applicable for event 1A~~
W non-used frequency			1	Applicable for event 2C
~~Reporting deactivation threshold~~			~~0~~	~~Applicable for event 1A~~
Time to Trigger		ms	0	
Filter coefficient			0	
T1		s	5	
T2		s	10	
T3		s	5	

TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1			Channel 2		
CPICH_Ec/Ior	dB	-10			-10		
PCCPCH_Ec/Ior	dB	-12			-12		
SCH_Ec/Ior	dB	-12			-12		
PICH_Ec/Ior	dB	-15			-15		
DPCH_Ec/Ior	dB	Note1	Note 1	Note 3	N/A	N/A	Note1
OCNS		Note 2			-0.941	-0.941	Note 2
$\hat{I}_{or}/I_{oc}$	dB	0			- Infinity	-1.8	-1.8
I_{oc}	dBm/3.84 MHz	-70					
CPICH_Ec/Io	dB	-13			- Infinity	-14	
Propagation Condition		AWGN					
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}. Note 3: The DPCH may not be power controlled by the power control loop.							

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 140 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040072**

Munich, Germany 9 - 13 February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **25.141** **CR** **341** ⌘ **rev** ⌘ Current version: **6.4.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Introduction of DCH performance test requirements for BS without Rx diversity
Source:	⌘	RAN WG4
Work item code:	⌘	TEI6
Date:	⌘	23/02/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The UTRA-FDD BS DCH demodulation performance requirements without Rx diversity have been introduced in the core spec TS25.104, but the test requirements for UTRA-FDD BS DCH demodulation performance is not specified in the test specification TS25.141. This CR is to update the test specification TS 25.141 in line with the introduction of DCH demodulation performance requirements introduced in the core spec TS25.104 Isolated Impact : This is an addition of performances for BS without RX diversity
Summary of change:	⌘	Addition of UTRA-FDD BS DCH demodulation minimum requirements and test requirements for BS without Rx diversity : • Minimum requirement in line with core spec TS25.104 • Test requirements are derived from minimum requirements plus test tolerance • The same test tolerances (0.4 dB for static, and 0.6 dB for multipath profiles) are used for BS without Rx div • The test configuration figures in annex B are updated accordingly
Consequences if not approved:	⌘	There will not be any performance test requirements for Base Station which is not equipped with a dual receiver antenna diversity.

Clauses affected:	⌘	8, Annex B

		Y	N			
Other specs affected:	⌘		X	Other core specifications	⌘	
		X		Test specifications		
			X	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://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.

8 Performance requirement

8.1 General

All Bit Error Ratio (BER) and Block Error ratio (BLER) measurements shall be carried out according to the general rules for statistical testing defined in ITU-T Recommendation O.153 [5] and Annex C.

If external BLER measurement is not used then the internal BLER calculation shall be used instead. When internal BLER calculation is used, the requirements of the verification test according to 8.6 shall be met in advance.

Performance requirements are specified for a number of test environments and multi-path channel classes.

The requirements only apply to those measurement channels that are supported by the base station.

For BS with dual receiver antenna diversity, only the BS performance requirements with Rx diversity are to be tested, the required E_b/N_0 shall be applied separately at each antenna port.

For BS without receiver antenna diversity, only the BS performance requirements without Rx diversity are to be tested, the required E_b/N_0 shall be applied at the BS Rx antenna port.

~~The requirements only apply to a base station with dual receiver antenna diversity. The required E_b/N_0 shall be applied separately at each antenna port.~~

In tests performed with signal generators a synchronization signal may be provided, from the base station to the signal generator, to enable correct timing of the wanted signal.

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 E_b/N_0 limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.2.1.2 Minimum requirement

The BLER should not exceed the limit for the E_b/N_0 specified in table 8.1.

Table 8.1: Performance requirements in AWGN channel.

Measurement channel	Received E_b/N_0 For BS with Rx diversity	Received E_b/N_0 For BS without Rx diversity	Required BLER
12.2 kbps	n.a.	n.a.	$< 10^{-1}$
	5.1 dB	8.3 dB	$< 10^{-2}$
64 kbps	RAN WG4	4.7 dB	$< 10^{-1}$
	1.7 dB	4.8 dB	$< 10^{-2}$
144 kbps	TEI6	3.8 dB	$< 10^{-1}$
	0.9 dB	4.0 dB	$< 10^{-2}$
384 kbps	B	4.0 dB	$< 10^{-1}$
	1.0 dB	4.1 dB	$< 10^{-2}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~
~~12.2 kbps~~	~~n.a.~~	~~5.1 dB~~
~~64 kbps~~	~~1.5 dB~~	~~1.7 dB~~
~~144 kbps~~	~~0.8 dB~~	~~0.9 dB~~
~~384 kbps~~	~~0.9 dB~~	~~1.0 dB~~

The reference for this requirement is TS 25.104 subclause 8.2.1.1.

8.2.1.3 Test purpose

The test shall verify the receiver's ability to receive the test signal under static propagation conditions with a BLER not exceeding a specified limit.

8.2.1.4 Method of test

8.2.1.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) For BS with Rx diversity, ~~C~~connect the BS tester generating the wanted signal and AWGN generators to both BS antenna connectors for diversity reception via a combining network as shown in annex B.

2) For BS without Rx diversity, connect the BS tester generating the wanted signal and AWGN generator to the BS antenna connector via a combining network as shown in annex B.

8.2.1.4.2 Procedure

1) Adjust the AWGN generator to -84 dBm/3.84 MHz at the BS input.

2) The characteristics of the wanted signal shall be configured according to the corresponding UL reference measurement channel defined in annex A.

3) Adjust the equipment so that required E_b/N_0 specified in table 8.2 is achieved. To achieve the specified E_b/N_O, the ratio of the wanted signal level relative to the AWGN signal at the BS input should be adjusted to: $10*\text{Log10}(R_b/3.84*10^6)+E_b/N_0$ [dB].

4) For each of the data rates in table 8.2 applicable for the base station, measure the BLER.

8.2.1.5 Test requirements

The BLER measured according to subclause 8.2.1.4.2 shall not exceed the BLER limits for the E_b/N_0 levels specified in table 8.2.

Table 8.2: Test requirements in AWGN channel.

Measurement channel	Received E_b/N_0 For BS with Rx diversity	Received E_b/N_0 For BS without Rx diversity	Required BLER
12.2 kbps	n.a.	n.a.	$< 10^{-1}$
	5.5 dB	8.7 dB	$< 10^{-2}$
64 kbps	1.9 dB	5.1 dB	$< 10^{-1}$
	2.1 dB	5.2 dB	$< 10^{-2}$
144 kbps	1.2 dB	4.2 dB	$< 10^{-1}$
	1.3 dB	4.4 dB	$< 10^{-2}$
384 kbps	1.3 dB	4.4 dB	$< 10^{-1}$
	1.4 dB	4.5 dB	$< 10^{-2}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~
~~12.2 kbps~~	~~n.a.~~	~~5.5 dB~~
~~64 kbps~~	~~1.9 dB~~	~~2.1 dB~~
~~144 kbps~~	~~1.2 dB~~	~~1.3 dB~~
~~384 kbps~~	~~1.3 dB~~	~~1.4 dB~~

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

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 E_b/N_0 limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.1.2 Minimum requirement

The BLER should not exceed the limit for the E_b/N_0 specified in table 8.3.

Table 8.3: Performance requirements in multipath Case 1 channel

Measurement channel	Received E_b/N_0 For BS with Rx diversity	Received E_b/N_0 For BS without Rx diversity	Required BLER
12.2 kbps	n.a.	14.0 dB	$< 10^{-1}$
	11.9 dB	19.1 dB	$< 10^{-2}$
64 kbps	6.2 dB	11.6 dB	$< 10^{-1}$
	9.2 dB	15.9 dB	$< 10^{-2}$
144 kbps	5.4 dB	10.8 dB	$< 10^{-1}$
	8.4 dB	15.0 dB	$< 10^{-2}$
384 kbps	5.8 dB	11.2 dB	$< 10^{-1}$
	8.8 dB	15.5 dB	$< 10^{-2}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~
~~12.2 kbps~~	~~n.a.~~	~~11.9 dB~~
~~64 kbps~~	~~6.2 dB~~	~~9.2 dB~~
~~144 kbps~~	~~5.4 dB~~	~~8.4 dB~~
~~384 kbps~~	~~5.8 dB~~	~~8.8 dB~~

The reference for this requirement is TS 25.104 subclause 8.3.1.1

8.3.1.3 Test Purpose

The test shall verify the receiver's ability to receive the test signal under slow multipath fading propagation conditions with a BLER not exceeding a specified limit.

8.3.1.4 Method of test

8.3.1.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) For BS with Rx diversity, ~~C~~connect the BS tester generating the wanted signal, multipath fading simulators and AWGN generators to both BS antenna connectors for diversity reception via a combining network as shown in annex B.

2) For BS without Rx diversity, connect the BS tester generating the wanted signal, multipath fading simulator and AWGN generator to the BS antenna connector via a combining network as shown in annex B.

8.3.1.4.2 Procedure

1) Adjust the AWGN generator to -84 dBm/3.84 MHz at the BS input.

2) The characteristics of the wanted signal shall be configured according to the corresponding UL reference measurement channel defined in annex A.

3) The multipath fading emulators shall be configured according to the corresponding channel model defined in annex D.

4) Adjust the equipment so that required E_b/N_0 specified in table 8.4 is achieved. To achieve the specified E_b/N_O, the ratio of the wanted signal level relative to the AWGN signal at the BS input should be adjusted to: $10*\text{Log10}(R_b/3.84*10^6)+E_b/N_0$ [dB].

5) For each of the data rates in table 8.4 applicable for the base station, measure the BLER.

8.3.1.5 Test requirements

The BLER measured according to subclause 8.3.1.4.2 shall not exceed the BLER limits for the E_b/N_0 levels specified in table 8.4.

Table 8.4: Test requirements in multipath Case 1 channel

Measurement channel	Received E_b/N_0 For BS with Rx diversity	Received E_b/N_0 For BS without Rx diversity	Required BLER
12.2 kbps	n.a.	14.6 dB	$< 10^{-1}$
	12.5 dB	19.7 dB	$< 10^{-2}$
64 kbps	6.8 dB	12.2 dB	$< 10^{-1}$
	9.8 dB	16.5 dB	$< 10^{-2}$
144 kbps	6.0 dB	11.4 dB	$< 10^{-1}$
	9.0 dB	15.6 dB	$< 10^{-2}$
384 kbps	6.4 dB	11.8 dB	$< 10^{-1}$
	9.4 dB	16.1 dB	$< 10^{-2}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~
~~12.2 kbps~~	~~n.a.~~	~~12.5 dB~~
~~64 kbps~~	~~6.8 dB~~	~~9.8 dB~~
~~144 kbps~~	~~6.0 dB~~	~~9.0 dB~~
~~384 kbps~~	~~6.4 dB~~	~~9.4 dB~~

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

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 Rate (BLER) allowed when the receiver input signal is at a specified E_b/N_0 limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.2.2 Minimum requirement

The BLER should not exceed the limit for the E_b/N_0 specified in table 8.5.

Table 8.5: Performance requirements in multipath Case 2 channel

Measurement channel	Received E_b/N_0 For BS with Rx Diversity	Received E_b/N_0 For BS without Rx Diversity	Required BLER
12.2 kbps	n.a.	11.0 dB	$< 10^{-1}$
	9.0 dB	15.0 dB	$< 10^{-2}$
64 kbps	4.3 dB	9.2 dB	$< 10^{-1}$
	6.4 dB	12.3 dB	$< 10^{-2}$
144 kbps	3.7 dB	8.2 dB	$< 10^{-1}$
	5.6 dB	11.5 dB	$< 10^{-2}$
384 kbps	4.1 dB	8.7 dB	$< 10^{-1}$
	6.1 dB	12.1 dB	$< 10^{-2}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~
~~12.2 kbps~~	~~n.a.~~	~~9.0 dB~~
~~64 kbps~~	~~4.3 dB~~	~~6.4 dB~~
~~144 kbps~~	~~3.7 dB~~	~~5.6 dB~~
~~384 kbps~~	~~4.1 dB~~	~~6.1 dB~~

The reference for this requirement is TS 25.104 subclause 8.3.2.1.

8.3.2.3 Test Purpose

The test shall verify the receiver's ability to receive the test signal that has a large time dispersion with a BLER not exceeding a specified limit.

8.3.2.4 Method of test

8.3.2.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) For BS with Rx diversity, ~~C~~connect the BS tester generating the wanted signal, multipath fading simulators and AWGN generators to both BS antenna connectors for diversity reception via a combining network as shown in annex B.

2) For BS without Rx diversity, connect the BS tester generating the wanted signal, multipath fading simulator and AWGN generator to the BS antenna connector via a combining network as shown in annex B.

8.3.2.4.2 Procedure

1) Adjust the AWGN generator to -84 dBm/3.84 MHz at the BS input.

2) The characteristics of the wanted signal shall be configured according to the corresponding UL reference measurement channel defined in annex A.

3) The multipath fading emulators shall be configured according to the corresponding channel model defined in annex D.

4) Adjust the equipment so that required E_b/N_0 specified in table 8.6 is achieved. To achieve the specified E_b/N_O, the ratio of the wanted signal level relative to the AWGN signal at the BS input should be adjusted to: $10*\text{Log10}(R_b/3.84*10^6)+E_b/N_0$ [dB].

5) For each of the data rates in table 8.6 applicable for the base station, measure the BLER.

8.3.2.5 Test requirements

The BLER measured according to subclause 8.3.2.4.2 shall not exceed the BLER limits for the E_b/N_0 levels specified in table 8.5.

Table 8.6: Test requirements in multipath Case 2 channel

Measurement channel	Received E_b/N_0 For BS with Rx Diversity	Received E_b/N_0 For BS without Rx Diversity	Required BLER
12.2 kbps	n.a.	11.6 dB	$< 10^{-1}$
	9.6 dB	15.6 dB	$< 10^{-2}$
64 kbps	4.9 dB	9.8 dB	$< 10^{-1}$
	7.0 dB	12.9 dB	$< 10^{-2}$
144 kbps	4.3 dB	8.8 dB	$< 10^{-1}$
	6.2 dB	12.1 dB	$< 10^{-2}$
384 kbps	4.7 dB	9.3 dB	$< 10^{-1}$
	6.7 dB	12.7dB	$< 10^{-2}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~
~~12.2 kbps~~	~~n.a.~~	~~9.6 dB~~
~~64 kbps~~	~~4.9 dB~~	~~7.0 dB~~
~~144 kbps~~	~~4.3 dB~~	~~6.2 dB~~
~~384 kbps~~	~~4.7 dB~~	~~6.7 dB~~

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

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 E_b/N_0 limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.3.3.2 Minimum requirement

The BLER should not exceed the limit for the E_b/N_0 specified in table 8.7.

Table 8.7: Performance requirements in multipath Case 3 channel

Measurement channel	Received E_b/N_0 For BS with Rx Diversity	Received E_b/N_0 For BS without Rx Diversity	Required BLER
12.2 kbps	n.a.	9.1 dB	$< 10^{-1}$
	7.2 dB	10.8 dB	$< 10^{-2}$
	8.0 dB	11.7 dB	$< 10^{-3}$
64 kbps	3.4 dB	7.1 dB	$< 10^{-1}$
	3.8 dB	7.7 dB	$< 10^{-2}$
	4.1 dB	8.5 dB	$< 10^{-3}$
144 kbps	2.8 dB	6.0 dB	$< 10^{-1}$
	3.2 dB	6.7 dB	$< 10^{-2}$
	3.6 dB	7.2 dB	$< 10^{-3}$
384 kbps	3.2 dB	6.5 dB	$< 10^{-1}$
	3.6 dB	7.2 dB	$< 10^{-2}$
	4.2 dB	7.9 dB	$< 10^{-3}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~	~~E_b/N_0 for required BLER < 10^{-3}~~
~~12.2 kbps~~	~~n.a~~	~~7.2 dB~~	~~8.0 dB~~
~~64 kbps~~	~~3.4 dB~~	~~3.8 dB~~	~~4.1 dB~~
~~144 kbps~~	~~2.8 dB~~	~~3.2 dB~~	~~3.6 dB~~
~~384 kbps~~	~~3.2 dB~~	~~3.6 dB~~	~~4.2 dB~~

The reference for this requirement is TS 25.104 subclause 8.3.3.1.

8.3.3.3 Test purpose

The test shall verify the receivers ability to receive the test signal under fast fading propagation conditions with a BLER not exceeding a specified limit.

8.3.3.4 Method of test

8.3.3.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) For BS with Rx diversity, ~~C~~connect the BS tester generating the wanted signal, multipath fading simulators and AWGN generators to both BS antenna connectors for diversity reception via a combining network as shown in annex B.

2) For BS without Rx diversity, connect the BS tester generating the wanted signal, multipath fading simulator and AWGN generator to the BS antenna connector via a combining network as shown in annex B.

8.3.3.4.2 Procedure

1) Adjust the AWGN generator to -84 dBm/3.84 MHz at the BS input.

2) The characteristics of the wanted signal shall be configured according to the corresponding UL reference measurement channel defined in annex A.

3) The multipath fading emulators shall be configured according to the corresponding channel model defined in annex D.

4) Adjust the equipment so that required E_b/N_0 specified in table 8.8 is achieved. To achieve the specified E_b/N_O, the ratio of the wanted signal level relative to the AWGN signal at the BS input should be adjusted to: $10*Log10(R_b /3.84*10^6)+E_b/N_0$ [dB].

5) For each of the data rates in table 8.8 applicable for the base station, measure the BLER

8.3.3.5 Test requirements

The BLER measured according to subclause 8.3.3.4.2 shall not exceed the BLER limits for E_b/N_0 levels specified in table 8.7.

Table 8.8: Test requirements in multipath Case 3 channel

Measurement channel	Received E_b/N_0 For BS with Rx Diversity	Received E_b/N_0 For BS without Rx Diversity	Required BLER
12.2 kbps	n.a.	9.7 dB	$< 10^{-1}$
	7.8 dB	11.4 dB	$< 10^{-2}$
	8.6 dB	12.3 dB	$< 10^{-3}$
64 kbps	4.0 dB	7.7 dB	$< 10^{-1}$
	4.4 dB	8.3 dB	$< 10^{-2}$
	4.7 dB	9.1 dB	$< 10^{-3}$
144 kbps	3.4 dB	6.6 dB	$< 10^{-1}$
	3.8 dB	7.3 dB	$< 10^{-2}$
	4.2 dB	7.8 dB	$< 10^{-3}$
384 kbps	3.8 dB	7.1 dB	$< 10^{-1}$
	4.2 dB	7.8 dB	$< 10^{-2}$
	4.8 dB	8.5 dB	$< 10^{-3}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER $< 10^{-1}$~~	~~E_b/N_0 for required BLER $< 10^{-2}$~~	~~E_b/N_0 for required BLER $< 10^{-3}$~~
~~12.2 kbps~~	~~n.a~~	~~7.8 dB~~	~~8.6 dB~~
~~64 kbps~~	~~4.0 dB~~	~~4.4 dB~~	~~4.7 dB~~
~~144 kbps~~	~~3.4 dB~~	~~3.8 dB~~	~~4.2 dB~~
~~384 kbps~~	~~3.8 dB~~	~~4.2 dB~~	~~4.8 dB~~

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

8.3.4 Multipath fading Case 4

8.3.4.1 Definition and applicability

The performance requirement of DCH in multipath fading Case 4 for Wide Area BS is determined by the maximum Block Error Ratio (BLER) allowed when the receiver input signal is at a specified E_b/N_0 limit. The BLER is calculated for each of the measurement channels supported by the base station.

The requirement in this subclause shall apply Wide Area BS only.

8.3.4.2 Minimum requirement

The BLER should not exceed the limit for the E_b/N_0 specified in table 8.8A.

Table 8.8A: Performance requirements in multipath Case 4 channel

Measurement channel	Received E_b/N_0 For BS with Rx Diversity	Received E_b/N_0 For BS without Rx Diversity	Required BLER
12.2 kbps	n.a.	12.1 dB	$< 10^{-1}$
	10.2 dB	13.8 dB	< 10-2
	11.0 dB	14.7 dB	< 10-3
64 kbps	6.4 dB	10.1 dB	< 10-1
	6.8 dB	10.7 dB	< 10-2
	7.1 dB	11.5 dB	< 10-3
144 kbps	5.8 dB	9.0 dB	< 10-1
	6.2 dB	9.7 dB	< 10-2
	6.6 dB	10.2 dB	< 10-3
384 kbps	6.2 dB	9.5 dB	< 10-1
	6.6 dB	10.2 dB	< 10-2
	7.2 dB	10.9 dB	< 10-3

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~	~~E_b/N_0 for required BLER < 10^{-3}~~
~~12.2 kbps~~	~~n.a~~	~~10.2 dB~~	~~11.0 dB~~
~~64 kbps~~	~~6.4 dB~~	~~6.8 dB~~	~~7.1 dB~~
~~144 kbps~~	~~5.8 dB~~	~~6.2 dB~~	~~6.6 dB~~
~~384 kbps~~	~~6.2 dB~~	~~6.6 dB~~	~~7.2 dB~~

The reference for this requirement is TS 25.104 subclause 8.3.4.1.

8.3.4.3 Test purpose

The test shall verify the receivers ability to receive the test signal under fast fading propagation conditions with a BLER not exceeding a specified limit.

8.3.4.4 Method of test

8.3.4.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) For BS with Rx diversity, ~~C~~connect the BS tester generating the wanted signal, multipath fading simulators and AWGN generators to both BS antenna connectors for diversity reception via a combining network as shown in annex B.

2) For BS without Rx diversity, connect the BS tester generating the wanted signal, multipath fading simulator and AWGN generator to the BS antenna connector via a combining network as shown in annex B.

8.3.4.4.2 Procedure

1) Adjust the AWGN generator to -84 dBm/3.84 MHz at the BS input.

2) The characteristics of the wanted signal shall be configured according to the corresponding UL reference measurement channel defined in annex A.

3) The multipath fading emulators shall be configured according to the corresponding channel model defined in annex D.

4) Adjust the equipment so that required E_b/N_0 specified in table 8.8B is achieved. To achieve the specified E_b/N_O, the ratio of the wanted signal level relative to the AWGN signal at the BS input should be adjusted to: $10*Log10(R_b /3.84*10^6)+E_b/N_0$ [dB].

5) For each of the data rates in table 8.8B applicable for the base station, measure the BLER.

8.3.4.5 Test requirements

The BLER measured according to subclause 8.3.4.4.2 shall not exceed the BLER limits for the E_b/N_0 levels specified in table 8.8B.

Table 8.8B: Test requirements in multipath Case 4 channel

Measurement channel	Received E_b/N_0 For BS with Rx Diversity	Received E_b/N_0 For BS without Rx Diversity	Required BLER
12.2 kbps	n.a.	12.7 dB	< 10^{-1}
	10.8 dB	14.4 dB	< 10-2
	11.6 dB	15.3 dB	< 10-3
64 kbps	7.0 dB	10.7 dB	< 10-1
	7.4 dB	11.3 dB	< 10-2
	7.7 dB	12.1 dB	< 10-3
144 kbps	6.4 dB	9.6 dB	< 10-1
	6.8 dB	10.3 dB	< 10-2
	7.2 dB	10.8 dB	< 10-3
384 kbps	6.8 dB	10.1 dB	< 10-1
	7.2 dB	10.8 dB	< 10-2
	7.8 dB	11.5 dB	< 10-3

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~	~~E_b/N_0 for required BLER < 10^{-3}~~
~~12.2 kbps~~	~~n.a~~	~~10.8 dB~~	~~11.6 dB~~
~~64 kbps~~	~~7.0 dB~~	~~7.4 dB~~	~~7.7 dB~~
~~144 kbps~~	~~6.4 dB~~	~~6.8 dB~~	~~7.2 dB~~
~~384 kbps~~	~~6.8 dB~~	~~7.2 dB~~	~~7.8 dB~~

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

8.4 Demodulation of DCH in moving propagation conditions

8.4.1 Definition and applicability

The performance requirement of DCH in moving propagation conditions is determined by the maximum Block Error Ratio (BLER) allowed when the receiver input signal is at a specified Eb/N0 limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.4.2 Minimum requirement

The BLER should not exceed the limit for the E_b/N_0 specified in table 8.9.

Table 8.9: Performance requirements in moving channel

Measurement channel	Received E_b/N_0 For BS with Rx Diversity	Received E_b/N_0 For BS without Rx Diversity	Required BLER
12.2 kbps	n.a.	n.a.	$< 10^{-1}$
	5.7 dB	8.7 dB	$< 10^{-2}$
64 kbps	2.1 dB	5.3 dB	$< 10^{-1}$
	2.2 dB	5.5 dB	$< 10^{-2}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~
~~12.2 kbps~~	~~n.a.~~	~~5.7 dB~~
~~64 kbps~~	~~2.1 dB~~	~~2.2 dB~~

The reference for this requirement is TS 25.104 subclause 8.4.1.

8.4.3 Test purpose

The test shall verify the receiver's ability to receive and track the test signal with a BLER not exceeding the specified limit.

8.4.4 Method of test

8.4.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) For BS with Rx diversity, ~~C~~connect the BS tester generating the wanted signal, multipath fading simulators and AWGN generators to both BS antenna connectors for diversity reception via a combining network as shown in annex B~~D~~.

2) For BS without Rx diversity, connect the BS tester generating the wanted signal, multipath fading simulator and AWGN generator to the BS antenna connector via a combining network as shown in annex B.

8.4.4.2 Procedure

1) Adjust the AWGN generator to -84 dBm/3.84 MHz at the BS input.

2) The characteristics of the wanted signal shall be configured according to the corresponding UL reference measurement channel defined in annex A.

3) The multipath fading emulators shall be configured according to the corresponding channel model defined in annex D.

4) Adjust the equipment so that required E_b/N_0 specified in table 8.10 is achieved. To achieve the specified E_b/N_O, the ratio of the wanted signal level relative to the AWGN signal at the BS input should be adjusted to: $10*\text{Log10}(R_b/3.84*10^6)+E_b/N_0$ [dB].

5) For each of the data rates in table 8.10 applicable for the base station, measure the BLER.

8.4.5 Test requirements

The BLER measured according to subclause 8.4.4.2 shall not exceed the BLER limits for the E_b/N_0 levels specified in table 8.10.

Table 8.10: Test requirements in moving channel

Measurement channel	Received E_b/N_0 For BS with Rx Diversity	Received E_b/N_0 For BS without Rx Diversity	Required BLER
12.2 kbps	n.a.	n.a.	$< 10^{-1}$
	6.3 dB	9.3 dB	$< 10^{-2}$
64 kbps	2.7 dB	5.9 dB	$< 10^{-1}$
	2.8 dB	6.1 dB	$< 10^{-2}$

~~Measurement channel data rate (R_b)~~	~~E_b/N_0 for required BLER < 10^{-1}~~	~~E_b/N_0 for required BLER < 10^{-2}~~
~~12.2 kbps~~	~~n.a.~~	~~6.3 dB~~
~~64 kbps~~	~~2.7 dB~~	~~2.8 dB~~

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

8.5 Demodulation of DCH in birth/death propagation conditions

8.5.1 Definition and applicability

The performance requirement of DCH in birth/death propagation conditions is determined by the maximum Block Error Ratio (BLER) allowed when the receiver input signal is at a specified E_b/N_0 limit. The BLER is calculated for each of the measurement channels supported by the base station.

8.5.2 Minimum requirement

The BLER should not exceed the limit for the E_b/N_0 specified in table 8.11.

Table 8.11: Performance requirements in birth/death channel

Measurement channel data rate (R_b)	E_b/N_0 for required BLER < 10^{-1}	E_b/N_0 for required BLER < 10^{-2}
12.2 kbps	n.a.	7.7 dB
64 kbps	4.1 dB	4.2 dB

The reference for this requirement is TS 25.104 subclause 8.5.1.

8.5.3 Test purpose

The test shall verify the receiver's ability to receive the test signal to find new multi path components with a BLER not exceeding the specified limit.

8.5.4 Method of test

8.5.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) Connect the BS tester generating the wanted signal, multipath fading simulators and AWGN generators to both BS antenna connectors for diversity reception via a combining network as shown in annex B.

8.5.4.2 Procedure

1) Adjust the AWGN generator to -84 dBm/3.84 MHz at the BS input.

2) The characteristics of the wanted signal shall be configured according to the corresponding UL reference measurement channel defined in annex A.

3) The multipath fading emulators shall be configured according to the corresponding channel model defined in annex D.

4) Adjust the equipment so that required E_b/N_0 specified in table 8.12 is achieved. To achieve the specified E_b/N_O, the ratio of the wanted signal level relative to the AWGN signal at the BS input should be adjusted to: $10*Log10(R_b /3.84*10^6)+E_b/N_0$ [dB].

5) For each of the data rates in table 8.12 applicable for the base station, measure the BLER.

8.5.5 Test requirements

The BLER measured according to subclause 8.5.4.2 shall not exceed the BLER limits for the E_b/N_0 levels specified in table 8.12.

Table 8.12: Test requirements in birth/death channel

Measurement channel data rate (R_b)	E_b/N_0 for required BLER < 10^{-1}	E_b/N_0 for required BLER < 10^{-2}
12.2 kbps	n.a.	8.3 dB
64 kbps	4.7 dB	4.8 dB

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 4.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex F.

8.6 Verification of the internal BLER calculation

8.6.1 Definition and applicability

Base Station System with internal BLER calculates block error rate from the CRC blocks of the received. This test is performed only if Base Station System has this kind of feature. All data rates which are used in clause 8 Performance requirement testing shall be used in verification testing. This test is performed by feeding measurement signal with known BLER to the input of the receiver. Locations of the erroneous blocks shall be randomly distributed within a frame. Erroneous blocks shall be inserted into the UL signal as shown in figure 8.1.

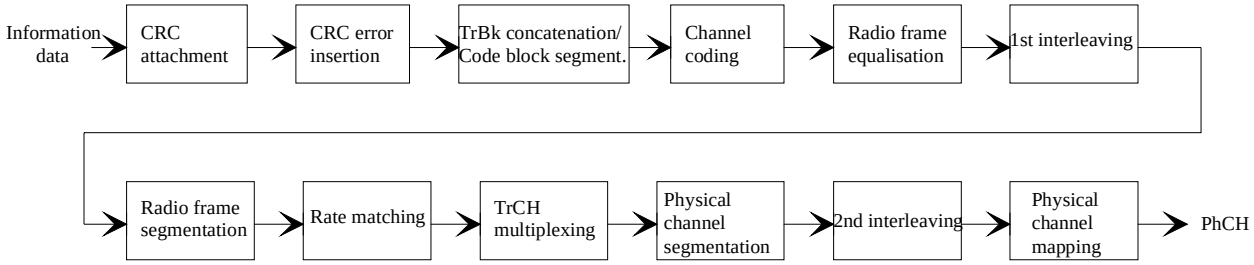

Figure 8.1: BLER insertion to the output data

8.6.2 Minimum requirement

BLER indicated by the Base Station System shall be within ±10% of the BLER generated by the RF signal source. Measurement shall be repeated for each data rate as specified in table 8.13.

Table 8.13

Transport channel combination	Data rate	BLER
DPCH	12,2 kbps	0.01
DPCH	64 kbps	0.01
DPCH	144 kbps	0.01
DPCH	384 kbps	0.01

8.6.3 Test purpose

To verify that the internal BLER calculation accuracy shall met requirements for conformance testing.

8.6.4 Method of test

8.6.4.1 Initial conditions

Test environment: normal; see subclause 4.4.1.

RF channels to be tested: B, M and T; see subclause 4.8

1) For BS with Rx diversity, ~~C~~connect the BS tester generating the wanted signal to both BS antenna connectors for diversity reception via a combining network as shown in annex B.

2) For BS without Rx diversity, connect the BS tester generating the wanted signal to the BS antenna connector as shown in annex B.

~~2~~3) Set correct signal source parameters as specified in table 8.14.

Table 8.14: UL Signal levels for different data rates

Data rate	Signal level	Unit
12,2 kbps	-111	dBm/3.84 MHz
64 kbps	-107	dBm/3.84 MHz
144 kbps	-104	dBm/3.84 MHz
384 kbps	-100	dBm/3.84 MHz

Note: PN9 can be used as data sequence for the test

8.6.4.2 Procedure

1) The characteristics of the wanted signal shall be configured according to the corresponding UL reference measurement channel defined in annex A.

2) The BLER insertion to the wanted signal shall be configured according to the corresponding data rate in table 8.13.

3) Adjust the BS tester so that the required UL signal level specified in table 8.14 is achieved.

For each of the data rates in table 8.13 applicable for the base station, measure the BLER at least over 50 000 blocks.

8.6.5 Test requirement

BLER indicated by the Base Station System shall be within requirement as specified in subclause 8.6.2.

{Separate Section}

Annex B (informative): Measurement system set-up

Example of measurement system set-ups are attached below as an informative annex.

B.1 Transmitter

B.1.1 Maximum output power, total power dynamic range

Figure B.1: Measuring system Set-up for maximum output power, total power dynamic range

B.1.2 Frequency, Code Power and Transmit Modulation

Figure B.2: Measurement system set up for RF frequency, several code power tests and transmit modulation (EVM and PCDE)

B.1.3 Power control steps and power control dynamic range

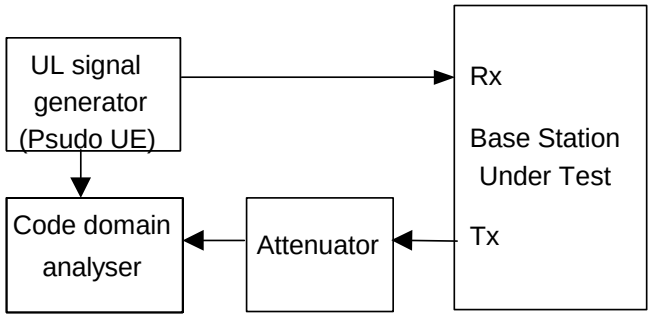

Figure B.3: Measuring system Set-up for power control steps and power control dynamic range measurements

B.1.4 Out of band emission

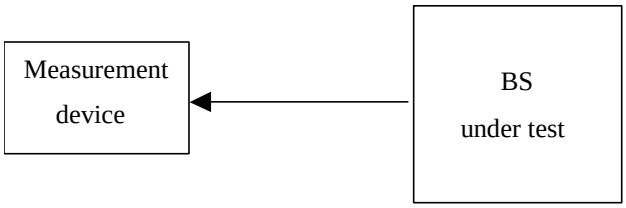

Figure B.4: Measuring system Set-up for Out of band emission measurements

B.1.5 Transmit intermodulation

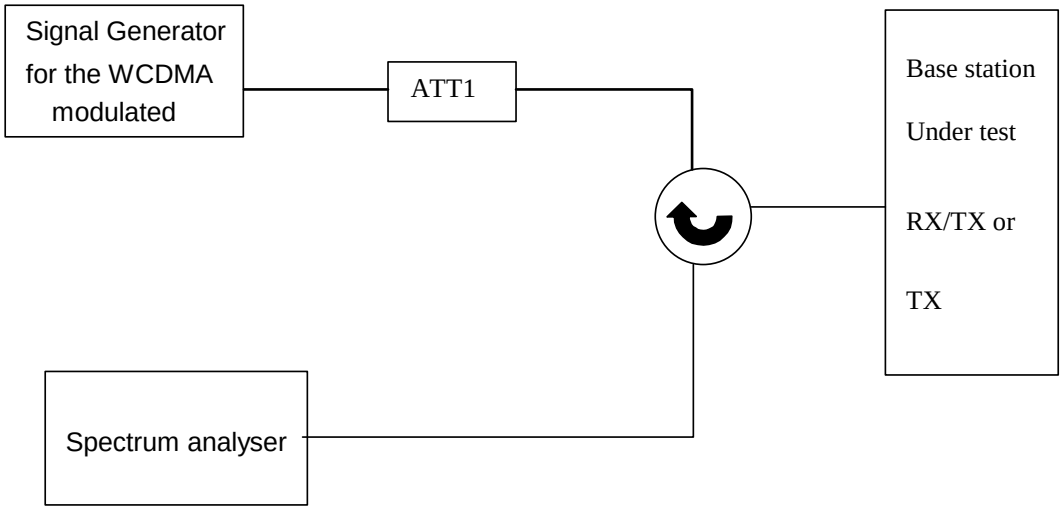

Figure B.5: Measuring system Set-up for Base Station Transmit Intermodulation Tests

B.1.6 Time alignment error in TX Diversity

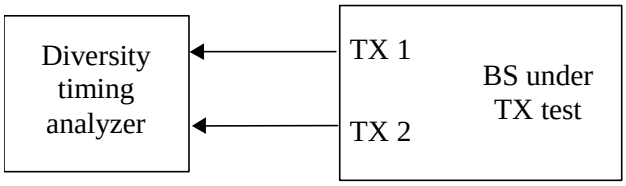

Figure B.6: Measuring system set-up for time alignment error in TX diversity

B.2 Receiver

B.2.1 Reference sensitivity level

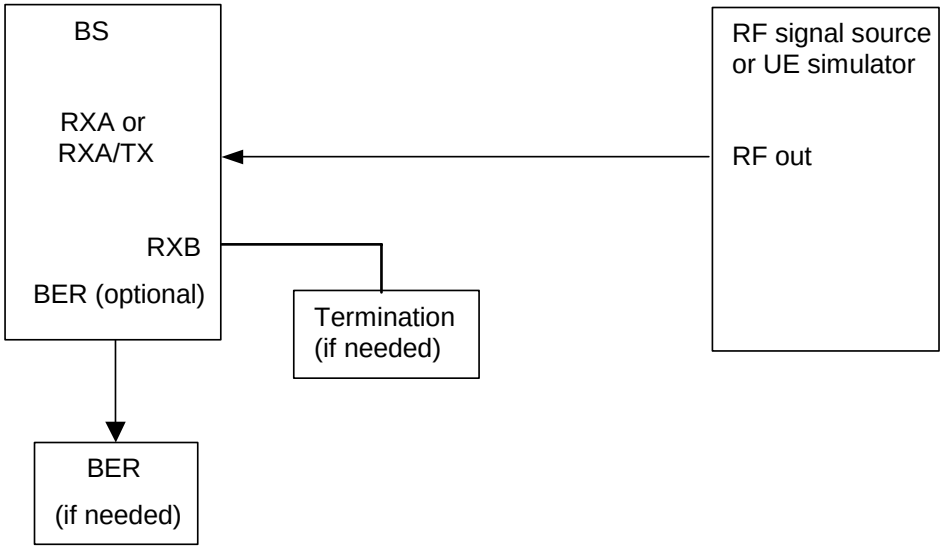

Figure B.7: Measuring system Set-up for Base Station Reference sensitivity level Testes

B.2.2 Dynamic range

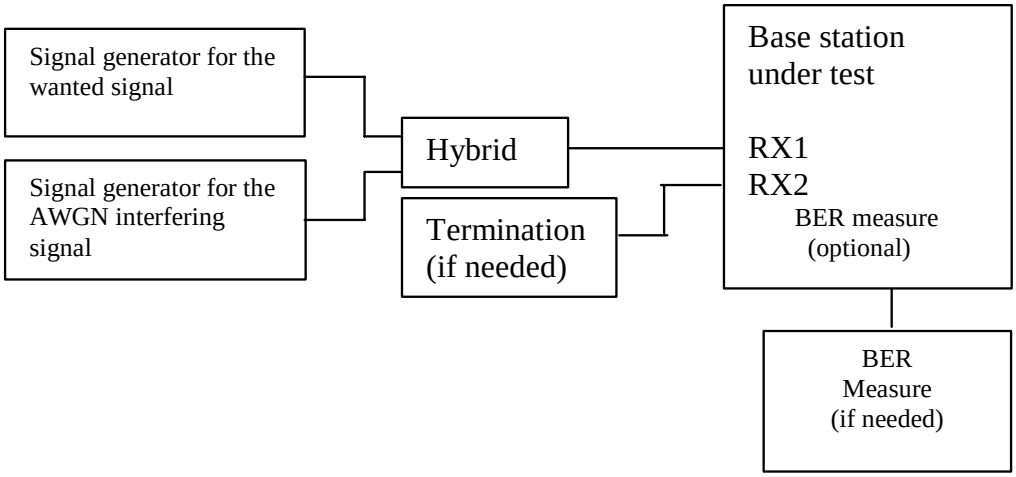

Figure B.8: Measuring system Set-up for Dynamic range

B.2.3 Adjacent Channel Selectivity (ACS)

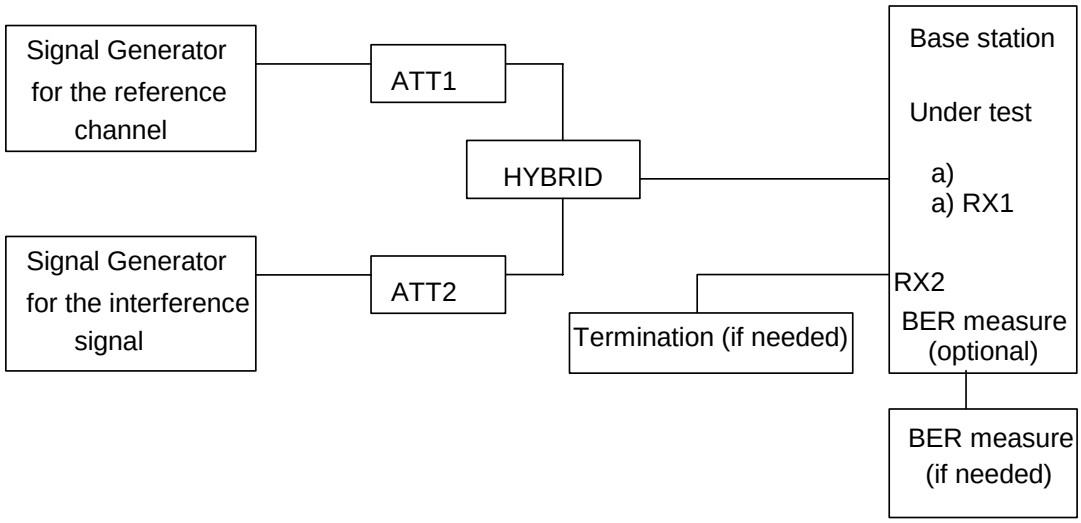

Figure B.9: Measuring system Set-up for Adjacent channel selectivity

B.2.4 Blocking characteristics

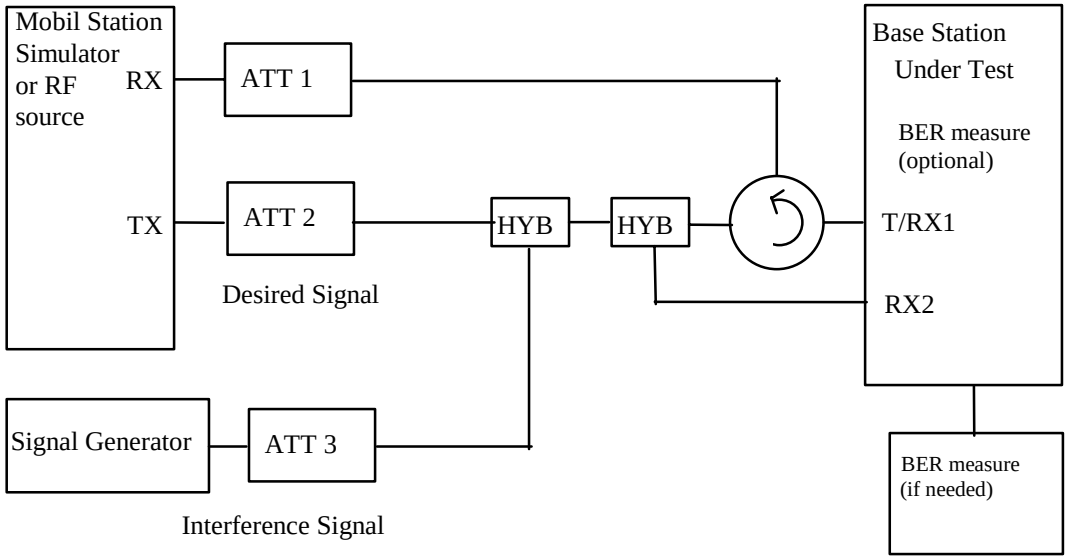

Figure B.10: Measuring system Set-up for Blocking characteristics

B.2.5 Intermodulation characteristics

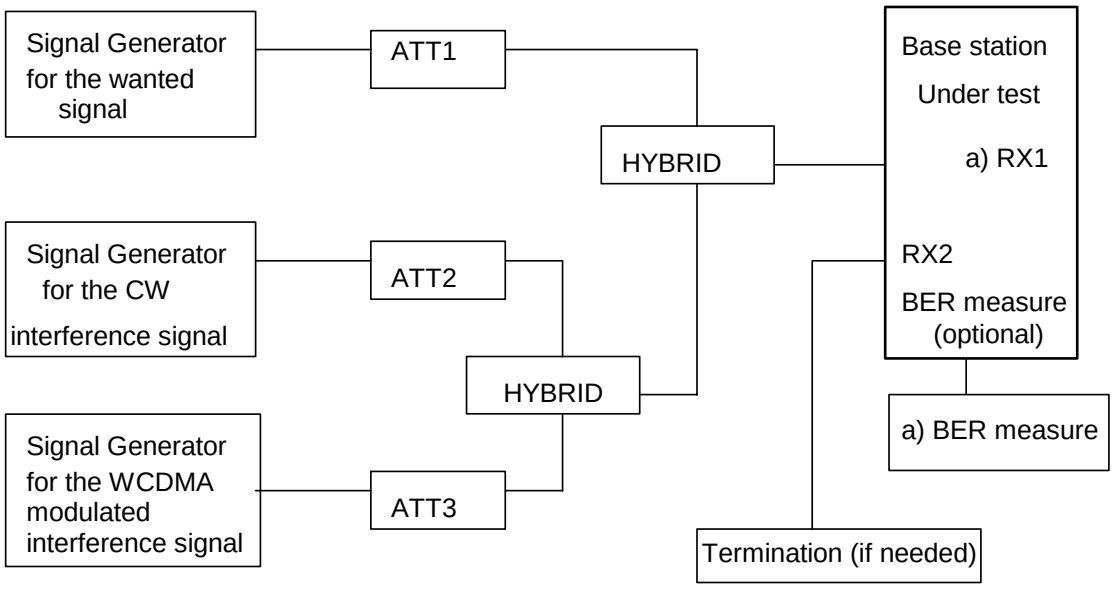

Figure B.11: Measuring system Set-up for intermodulation characteristics

B.2.6 Receiver spurious emission

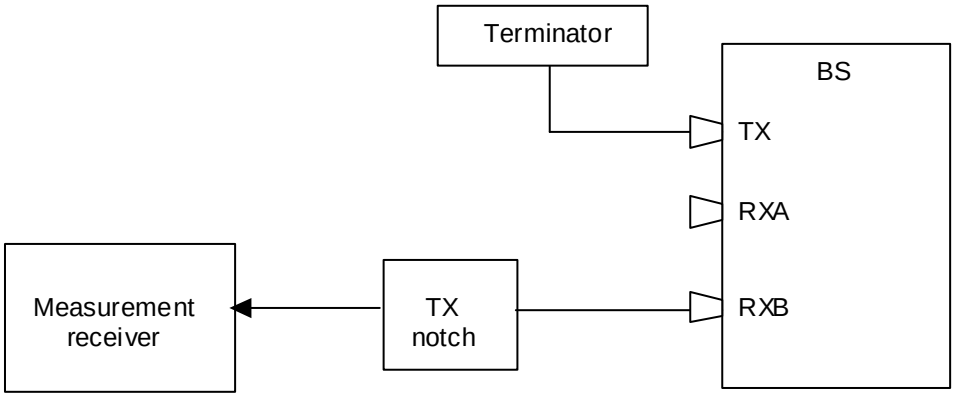

Figure B.12: Measuring system Set-up for Receiver spurious emission

B.3 Performance requirement

B.3.1 Demodulation of DCH, RACH and CPCH in static conditions

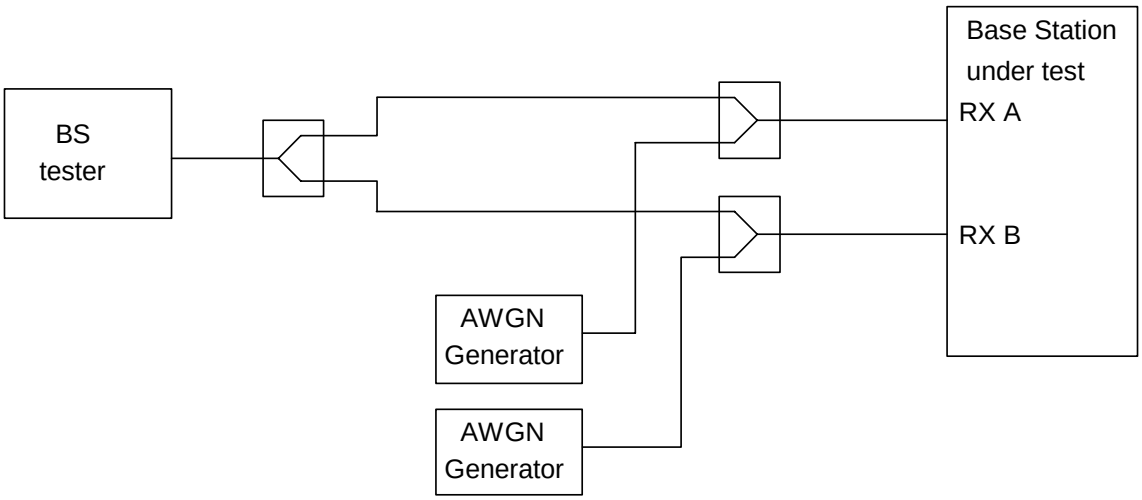

Figure B.13: Functional Set-up for Demodulation of DCH, RACH and CPCH in static conditions for BS with Rx diversity

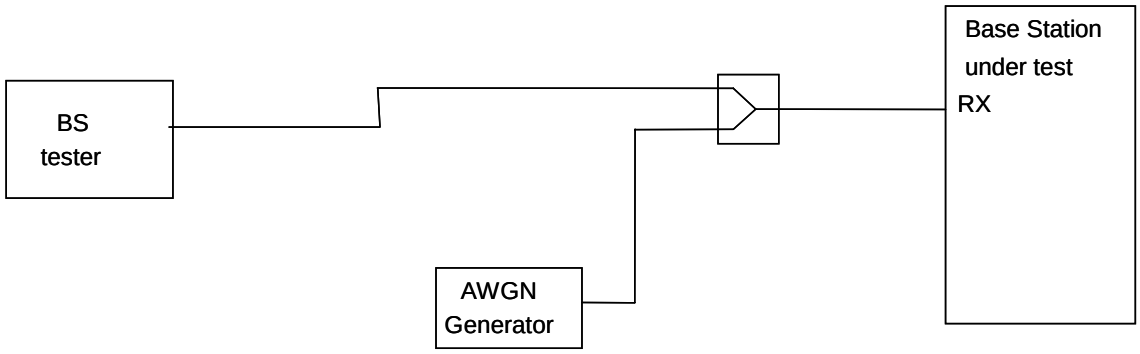

Figure B.13a: Functional Set-up for Demodulation of DCH, RACH and CPCH in static conditions for BS without Rx diversity

B.3.2 Demodulation of DCH, RACH and CPCH in multipath fading conditions

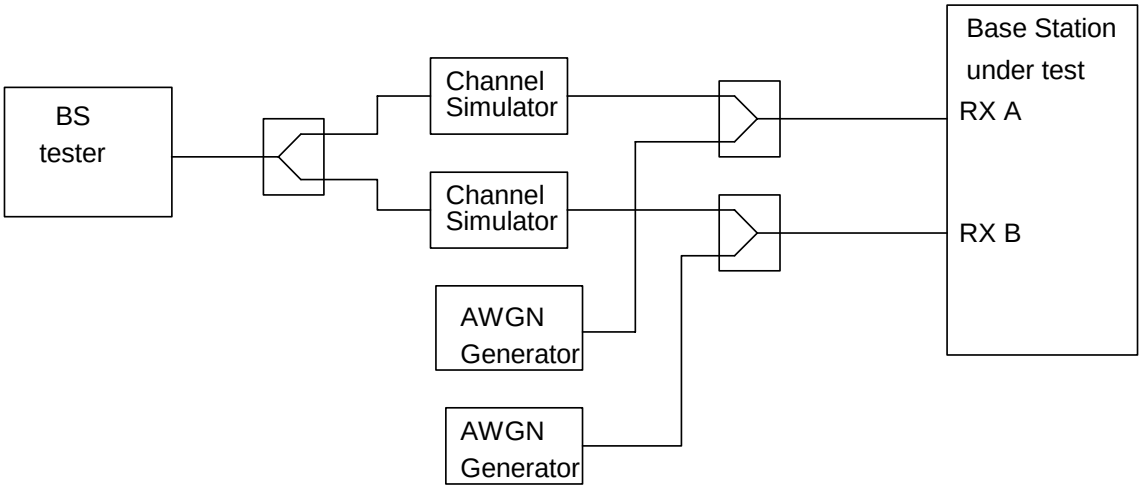

Figure B.14: Functional Set-up for Demodulation of DCH, RACH and CPCH in multipath fading conditions for BS with Rx diversity

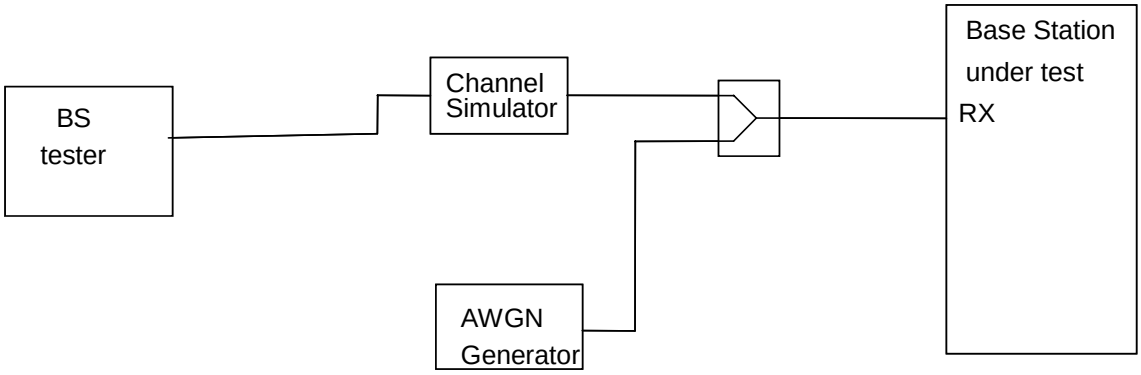

Figure B.14a: Functional Set-up for Demodulation of DCH, RACH and CPCH in multipath fading conditions for BS without Rx diversity

B.3.3 Verification of the internal BER and BLER calculation

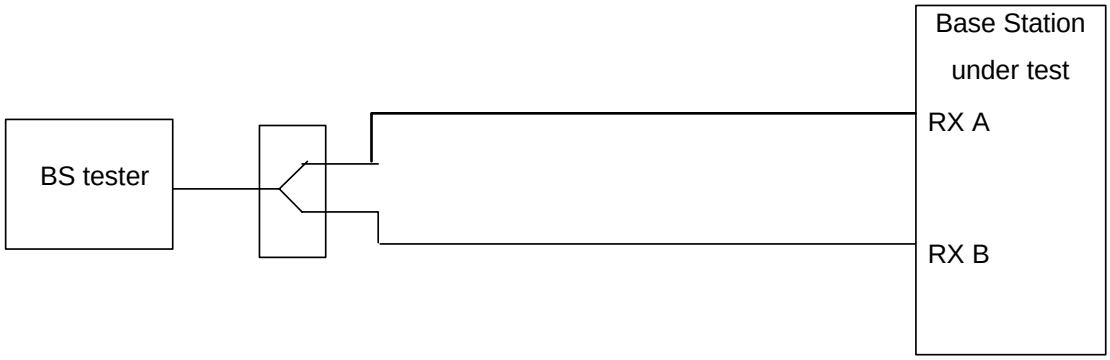

Figure B.15: Functional Set-up for Verification of the internal BLER calculation for BS with Rx diversity

Figure B.15a: Functional Set-up for Verification of the internal BLER calculation for BS without Rx diversity

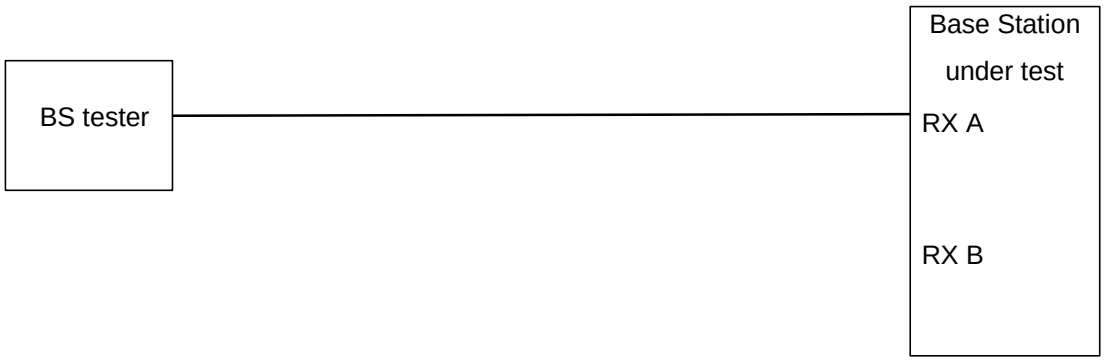

Figure B.16: Functional Set-up for Verification of the internal BER calculation