

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

**TSGRP#6(99)773**

**Title:** Agreed CRs of category "B" (New features) to TS 25.101

**Source:** TSG-RAN WG4

**Agenda item:** 5.4.3

<b>TSG_DOC</b>	<b>SPEC</b>	<b>CR</b>	<b>RE</b>	<b>3G_P</b>	<b>SUBJECT</b>	<b>CAT</b>	<b>VERS_CUR</b>	<b>VERS_NEW</b>
R4-99896	25.101	008		R99	Addition of propagation condition to inner and outer loop PC tests in	B	3.0.0	3.1.0
R4-99931	25.101	010		R99	Modifications to demodulation test parameters and requirements in inter-cell soft handover	B	3.0.0	3.1.0
R4-99A02	25.101	019		R99	Performance requirements in downlink compressed mode	B	3.0.0	3.1.0



## 8.8 Inner loop power control in downlink

Performance of the inner loop power control in downlink is determined by the Block Error Rate (BLER) values and by the measured average transmitted DPCH\_Ec/I<sub>or</sub> value.

### 8.8.1 Inner loop power control in the downlink

#### 8.8.1.1 Minimum requirements

For the parameters specified in Table 44, the BLER and DPCH\_Ecd/I<sub>or</sub> value shall not exceed the values specified in Table 45.

Note

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

**Table 44: Test parameters for downlink inner loop power control**

Parameter	Unit	Test 1	Test 2
$\hat{I}_{or}/I_{oc}$	dB	9	-1
$I_{oc}$	dBm/3.84 MHz	-60	-60
Information Data Rate	kbps	12.2	12.2
TFCI	-	on	on
Propagation Conditions		<u>Case 4 TBD</u>	<u>Case 4 TBD</u>
<del><math>DPCH\_E_c/I_{or}</math></del>	<del>dB</del>		

**Table 45: Requirements in downlink inner loop power control**

Parameter	Unit	Test 1	Test 2
$\frac{DPCH\_E_c}{I_{or}}$	dB		
Target Quality		FFS	FFS
Confidence level	%		

## 8.9 Outer loop power control in downlink

Outer loop power control in the downlink is the ability of the UE receiver to maintain the suitable target for the inner loop closed loop PC according to the required link quality set by the network.

### 8.9.1 Outer loop power control in the downlink

#### 8.9.1.1 Minimum requirements

For the parameters specified in Table 46 the downlink  $\frac{DPCH\_E_c}{I_{or}}$  power shall be below the specified value and the reported quality value shown in table 47.

Note

1. Power control is ON during the test.
2. The averaging time T shall be long enough to minimize the previous quality target impact to the result.

**Table 46: Test parameter for downlink outer loop power control**

Parameter	Unit	Test 1	Test 2
$\hat{I}_{or}/I_{oc}$	dB	5	
$I_{oc}$	dBm/3.84 MHz	-60	
Information Data Rate	kbps	12.2	
TFCI	-	On	
Reporting delay, or averaging period, T	ms	[ ]	[ ]
Propagation condition		Case 4 <del>{TBD}</del>	

**Table 47: Requirements in downlink outer loop power control**

Parameter	Unit	Test 1	Test 2
$\frac{DPCH\_E_c}{I_{or}}$	dB	[max. needed channel power]	[max. needed channel power]
Target quality value		FFS	FFS
Reported quality value			
Confidence level			

## Annex B (normative): Propagation conditions

### B.1 General

### B.2 Propagation Conditions

#### B.2.1 Static propagation condition

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

#### B.2.2 Multi-path fading propagation conditions

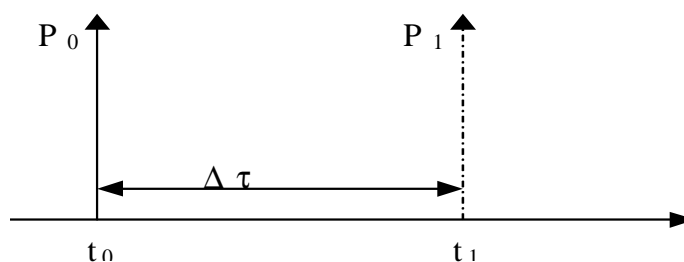
Table B2 shows propagation conditions that are used for the performance measurements in multi-path fading environment. All taps have classical Doppler spectrum.

**Table B2: Propagation Conditions for Multi path Fading Environments**

Case 1, speed 3km/h		Case 2, speed 3 km/h		Case 3, 120 km/h		<u>Case 4, 15 km/h</u>	
Relative Delay [ns]	Average Power [dB]	Relative Delay [ns]	Average Power [dB]	Relative Delay [ns]	Average Power [dB]	<u>Relative Delay [ns]</u>	<u>Average Power [dB]</u>
0	0	0	0	0	0	<u>0</u>	<u>0</u>
976	-10	976	0	260	-3	<u>976</u>	<u>0</u>
		20000	0	521	-6		
				781	-9		

#### B.2.3 Moving propagation conditions

The dynamic propagation conditions for the test of the baseband performance are non fading channel models with two taps. The moving propagation condition has two tap, one static, Path0, and one moving, Path1. The time difference between the two paths is according Equation (B.1)



**Figure B1: The moving propagation conditions**

$$\Delta\tau = \left(1 + \frac{A}{2}(1 + \sin(\Delta\omega \cdot t))\right) \mu s$$

*Equation B.1*

The parameters in the equation are shown in.

<b>A</b>	5 $\mu s$
<b><math>\Delta\omega</math></b>	40*10 <sup>-3</sup> s <sup>-1</sup>

<h2 style="margin: 0;">CHANGE REQUEST</h2>		Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.
<b>25.101</b>	<b>CR 010</b>	Current Version: <span style="background-color: yellow; border: 1px solid black; padding: 2px 10px;"> </span>
GSM (AA.BB) or 3G (AA.BBB) specification number ↑	↑ CR number as allocated by MCC support team	
For submission to: <span style="background-color: yellow; border: 1px solid black; padding: 2px 10px;">TSG RAN#6</span> <i>list expected approval meeting # here</i> ↑	for approval <input checked="" type="checkbox"/> <input type="checkbox"/> for information	strategic <input type="checkbox"/> non-strategic <input type="checkbox"/> <i>(for SMG use only)</i>

Form: CR cover sheet, version 2 for 3GPP and SMG    The latest version of this form is available from: <ftp://ftp.3gpp.org/Information/CR-Form-v2.doc>

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

**Source:** Nokia                      **Date:** 99-12-08

**Subject:** Modifications to demodulation test parameters and requirements in inter-cell soft handover

**Work item:** UTRAN

<b>Category:</b>	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input checked="" type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	<b>Release:</b>	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input type="checkbox"/> Release 00 <input type="checkbox"/>
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*(only one category shall be marked with an X)*

**Reason for change:**

- Geometric values were missing from demodulation test in inter-cell soft handover. AH01 has agreed to use proposed values as a working assumption.
- DPCH\_Ec/Ior has been removed from test parameter table and it has inserted to a test requirement table. Reason is to align SHO test with other tests in Section 8.
- Parameter DCH\_Eb/Nt was removed from test parameter table to be consistent with other tables in Section 8

**Clauses affected:** 8.7

<b>Other specs affected:</b>	Other 3G core specifications <input type="checkbox"/> Other GSM core specifications <input type="checkbox"/> MS test specifications <input checked="" type="checkbox"/> BSS test specifications <input type="checkbox"/> O&M specifications <input type="checkbox"/>	→ List of CRs: → List of CRs: → List of CRs: → List of CRs: → List of CRs:	
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**Other comments:**  



<----- double-click here for help and instructions on how to create a CR.

## 8.7 Demodulation in Handover conditions

### 8.7.1 Inter-Cell Soft Handover Performance

The bit error rate characteristics of UE is determined during an inter-cell soft handover. During the soft handover a UE receives signals from different Base Stations. A UE has to be able to demodulate two PCCPCH channels and to combine the energy of DCH channels. Delay profiles of signals received from different Base Stations are assumed to be the same but time shifted by 2440 ns (10 chips).

The receive characteristics of the different channels during inter-cell handover are determined by the average Block Error Rate (BLER) values.

#### 8.7.1.1 Minimum requirement

For the parameters specified in Table 42, the BLER shall not exceed the piece-wise linear BLER curve specified by the points in Table 43

**Table 42: DCH parameters in multi-path propagation conditions during Soft Handoff (Case 3)**

Parameter	Unit	Test 1	Test 2	Test 3	Test 4	Test 5
$\frac{DPCH\_E_c}{I_{or}}$	dB					
$\hat{I}_{or1}/I_{oc}$ and $\hat{I}_{or2}/I_{oc}$	dB	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>	<u>6</u>
$I_{oc}$	dBm/3.84 MHz					
Information data Rate	kbps	12.2	12.2	64	144	384
TFCI	-	off	on	on	on	on
<del><math>DCH\_E_b/N_t</math></del>	dB					



**Table 43: DCH requirements in multi-path propagation conditions during Soft Handoff (Case 3)**

Test Number	<del><math>DCH - E_b/N_t</math></del> $\frac{DPCH - E_c}{I_{or}}$	BLER
1		
2		
3		
4		
5		

# 3G CHANGE REQUEST

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**25.101 CR 020**

Current Version: **3.0.0**

3G specification number ↑

↑ CR number as allocated by 3G support team

For submission to TSG **RAN#6**  
list TSG meeting no. here ↑

for approval  (only one box should  
for information  be marked with an X)

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

**Proposed change affects:**  
(at least one should be marked with an X)

USIM

ME

UTRAN

Core Network

**Source:** RAN WG4

**Date:** 10/12/99

**Subject:** Performance requirements in downlink compressed mode

**3G Work item:** UTRA

**Category:**

(only one category shall be marked with an X)

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

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

**Reason for change:**

Performance requirements in downlink compressed mode were lacking.

**Clauses affected:** New sections 8.10, Annex A.4

**Other specs affected:**

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

**Other comments:**



help.doc

<----- double-click here for help and instructions on how to create a CR.

## 8.10 Downlink compressed mode

Downlink compressed mode is used to create gaps in the downlink transmission, to allow the UE to make measurements on other frequencies.

### 8.10.1 Single link performance

The receiver single link performance of the Dedicated Traffic Channel (DCH) in compressed mode is determined by the Block Error Rate (BLER), average power in the downlink and the maximum power in the uplink.

The compressed mode parameters are given in Annex A.4.

#### 8.10.1.1 Minimum requirements

For the parameters specified in Table 48 the average downlink  $\frac{DPCH - E_c}{I_{or}}$  power shall be below the specified value for the reported BLER shown in table 49. The uplink DPDCH power shall be below the specified value.

Note

1. Inner loop power control is ON during the test.

**Table 48: Test parameter for downlink compressed mode**

<u>Parameter</u>	<u>Unit</u>	<u>Test 1</u>
<u><math>\hat{I}_{or}/I_{oc}</math></u>	<u>dB</u>	<u>9</u>
<u><math>I_{oc}</math></u>	<u>dBm/3.84 MHz</u>	<u>-60</u>
<u>Information Data Rate</u>	<u>kbps</u>	<u>12.2</u>
<u>TFCI</u>	<u>=</u>	<u>On</u>
<u>Propagation condition</u>		<u>Case 2</u>

**Table 49: Requirements in downlink compressed mode**

<u>Parameter</u>	<u>Unit</u>	<u>Test 1</u>
<u><math>\frac{DPCH - E_c}{I_{or}}</math></u>	<u>dB</u>	
<u>Target quality</u>		
<u>Downlink BLER</u>		
<u>Uplink DPDCH</u>	<u>dBm</u>	<u>[Maximum power/slot]</u>
<u>Confidence level</u>	<u>%</u>	

## A.4 DL reference compressed mode parameters

The following parameters characterise the transmission gap :

- TGL : 7
- SFN : FFS
- SN : FFS

The following parameters characterise the compressed mode pattern :

- TGP : FFS
- TGL : 7
- TGD : FFS
- PD: FFS
- SFN : FFS
- PCM: FFS

Transmission time reduction method FFS