TSG-RAN Meeting #12 *RP-010360*
Stockholm, Sweden, 12 - 15 June 2001

Title: **Agreed CRs (Release 4) to TS 25.104**

Source: **TSG-RAN WG4**

Agenda item: **8.4.4**

WG4 doc	Status WG4	Spec	CR	Phase	Title	Cat	V old	V new
R4-010557	agreed	25.104	72	Rel-4	Requirements for demodulation of RACH message	F	4.0.0	4.1.0
R4-010722	agreed	25.104	73	Rel-4	RACH preamble requirements	F	4.0.0	4.1.0

3GPP TSG RAN WG4 Meeting #17 R4-010557

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.104** **CR** **72** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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

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

Title:	⌘	Requirements for demodulation of RACH message
Source:	⌘	RAN WG4
Work item code:	⌘	TEI4
Date:	⌘	21 May 2001
Category:	⌘	***F***
Release:	⌘	*REL-4*

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

Use one of the following releases:

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

Reason for change:	⌘	Correction of requirements based simulation results and implementation margins were agreed.
Summary of change:	⌘	Performance of RACH message is updated.
Consequences if not approved:	⌘	Performance requirements will not be correct.

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

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
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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.

8.7 Performance requirement for RACH

Performance requirements for RACH consists of two parts: preamble detection and message demodulation. Requirements for these are in sections 8.7.1 and 8.7.2, respectively. Requirements are defined for two propagation conditions: static and fading case 3. The propagation conditions are defined in annexes B.1 and B.2.

8.7.1 Performance requirement for RACH preamble detection

Probability of false alarm, Pfa (=false detection of the preamble) when the preamble was not sent, shall be 10^{-3} or less. The performance measure Required Ec/N0 at probability of detection, Pd of 0.99 and 0.999. Only 1 signature is used and it is known by the receiver. The requirement for preamble detection, when the preamble was sent is in table 8.9 and 8.10 for static and case 3 fading.

Table 8.9: Requirements for Ec/N0 of Pd in static propagation condition

	Pd = 0.99	**Pd = 0.999**
Required Ec/N0	-20.5 dB	-20.1 dB

Table 8.10: Requirements of Ec/N0 of Pd in case 3 fading

	Pd = 0.99	**Pd = 0.999**
Required Ec/N0	-16.6 dB	-14.4 dB

8.7.2 Demodulation of RACH message

The performance measure is required Eb/N0 for block error rate (BLER) of 10^{-1} and 10^{-2}. Both measurement channels have TTI=20 ms. Payloads are 168 and 360 bits. Channel coding is rate ½ convolutional coding.

8.7.2.1 Minimum requirements for Static Propagation Condition

Table 8.11: Required Eb/N0 for static propagation

	TB size = 168 bits		**TB size = 360 bits**	
	BLER=10^{-1}	**BLER=10^{-2}**	**BLER=10^{-1}**	**BLER=10^{-2}**
Required Eb/N0	~~3~~4.1 dB	5.0 dB	3.9 dB	4.8 dB

8.7.2.2 Minimum requirements for Multipath Fading Case 3

Table 8.12: Required Eb/N0 for case 3 fading

	TB size = 168 bits		**TB size = 360 bits**	
	BLER=10^{-1}	**BLER=10^{-2}**	**BLER=10^{-1}**	**BLER=10^{-2}**
Required Eb/N0	7.4 dB	~~7~~8.5 dB	7.3 dB	8.3 dB

3GPP TSG RAN WG4 Meeting #17 **R4-010722**

Gothenburg, Sweden 21st - 25th May 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.104** **CR** **73** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Title:	⌘	RACH requirements for preamble detection in case 3 fading
Source:	⌘	RAN WG4
Work item code:	⌘	TEI4
Date:	⌘	2001-05-23
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

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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 requirements for RACH preamble detection in 25.104 are based on an average of results stated in R4-000894 and R4-010177. Both results in these documents differ about 2dB. R4-010595 shows results from simulation on RACH preamble detection in case 3 fading propagation condition, which are in line with results shown in R4-010177. Therefor the requirements for RACH preamble detection shall be based on average of the results in R4-010177 and R4-010595.
Summary of change:	⌘	The requirements for RACH preamble detection in case 3 fading conditions are to be changed to values based on average from results presented in R4-010177 and R4-010595.
Consequences if not approved:	⌘	Performance requirement for RACH preamble detection would be incorrect.

Clauses affected:	⌘	8.7.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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Table 8.10: Requirements of Ec/N0 of Pd in case 3 fading

	Pd = 0.99	**Pd = 0.999**
Required Ec/N0	~~-16.6~~15.5 dB	~~-14.4~~13.4 dB