TSG RAN Meeting #23 **RP-040036**
Phoenix, US, 10 - 12 March 2004

Title **CRs (Rel-5 and Rel-6 Category A) to TS25.101**
Source **TSG RAN WG4**
Agenda Item **7.5.5**

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-040075	25.101	327		F	Rel-5	5.9.0	Clarification of frequency error observation period for PRACH preambles	TEI5
R4-040076	25.101	328		A	Rel-6	6.3.0	Clarification of frequency error observation period for PRACH preambles	TEI5
R4-040100	25.101	332		F	Rel-5	5.9.0	Correction of a typo in section 9.3.2.2. (CQI Testing for UE Capability Categories 11 and 12)	HSDPA-RF
R4-040129	25.101	333		F	Rel-5	5.9.0	Minimum requirements for UE ACS	TEI5
R4-040130	25.101	334		A	Rel-6	6.3.0	Minimum requirements for UE ACS	TEI5

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040075**

Munich, Germany 9 - 13 February 2004

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CHANGE REQUEST

⌘ **25.101** **CR** **327** ⌘ **rev** ⌘ Current version: **5.9.0** ⌘

*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 of frequency error observation period for PRACH preambles
Source:	⌘	RAN WG4
Work item code:	⌘	TEI5
Date:	⌘	23/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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 measurement interval (observation period) defined for frequency error in clause 6.3 is inappropriate for the PRACH and PCPCH preambles and needs to be lengthened to align with the existing definition in clause 6.8 for the measurement interval for EVM. The existing one timeslot measurement interval disadvantages the UE given that the requirement for EVM is already defined over a longer interval.
Summary of change:	⌘	The frequency error measurement interval for the PRACH preamble is lengthened to align with clause 6.8 for EVM. Two editorial changes are also incorporated: 1. In clause 6.3 the word later is corrected to be latter. 2. Table 6.2 is deleted as it provides no useful information and introduces the unhelpful terms of frequency stability (presumably the inverse of frequency error) and AFC (Automatic Frequency Control) nether of which are defined terms in the context of the air interface requirements. The reference to AFC was removed from 34.121 at version 3.9.0 due to it causing confusion there.
Consequences if not approved:	⌘	Conformance tests for PRACH or PCPCH preamble modulation quality being considered by T1 could return confusing results. EVM would be measured having had the residual frequency error removed over an interval of 3904 chips but the measurement interval over which this same residual frequency error should be judged is only defined over an interval of one timeslot (2560 chips). It is not possible to perform the two measurements over different intervals since the results can only be considered together. EVM by definition returns frequency

	error as a residual result and an independent frequency error measurement carried out over a shorter interval would have no defined limit for the allowable EVM. Note: A longer measurement interval for frequency error makes the 0.1 PPM requirement easier to pass.

Clauses affected:	⌘	6.3			
Other specs affected:	⌘	Y / N ☐ / X X / ☐ ☐ / X	Other core specifications Test specifications O&M Specifications	⌘	34.121
Other comments:	⌘	Equivalent CRs in other Releases: CR328 cat. A to 25.101 v6.3.0			

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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 Error

The UE modulated carrier frequency shall be accurate to within ±0.1 PPM observed over a period of one timeslot compared to the carrier frequency received from the Node B. For the PRACH and PCPCH preambles the measurement interval is lengthened to 3904 chips (being the 4096 chip nominal preamble period less a 25 µs transient period allowance at each end of the burst). These signals will have an apparent error due to Node B frequency error and Doppler shift. In the latter case, signals from the Node B must be averaged over sufficient time that errors due to noise or interference are allowed for within the above ±0.1PPM figure. The UE shall use the same frequency source for both RF frequency generation and the chip clock.

~~**Table 6.2: Frequency Error**~~

~~**AFC**~~	~~**Frequency stability**~~
~~ON~~	~~within ± 0.1 PPM~~

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040076**

Munich, Germany 9 - 13 February 2004

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CHANGE REQUEST

⌘ **25.101** **CR** **328** ⌘ **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:	⌘	Clarification of frequency error observation period for PRACH preambles
Source:	⌘	RAN WG4
Work item code:	⌘	TEI5
Date:	⌘	23/02/2004
Category:	⌘	**A**
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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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 measurement interval (observation period) defined for frequency error in clause 6.3 is inappropriate for the PRACH and PCPCH preambles and needs to be lengthened to align with the existing definition in clause 6.8 for the measurement interval for EVM. The existing one timeslot measurement interval disadvantages the UE given that the requirement for EVM is already defined over a longer interval.

Summary of change: ⌘ The frequency error measurement interval for the PRACH preamble is lengthened to align with clause 6.8 for EVM.

Two editorial changes are also incorporated:

1. In clause 6.3 the word later is corrected to be latter.
2. Table 6.2 is deleted as it provides no useful information and introduces the unhelpful terms of frequency stability (presumably the inverse of frequency error) and AFC (Automatic Frequency Control) nether of which are defined terms in the context of the air interface requirements. The reference to AFC was removed from 34.121 at version 3.9.0 due to it causing confusion there.

Consequences if not approved: ⌘ Conformance tests for PRACH or PCPCH preamble modulation quality being considered by T1 could return confusing results. EVM would be measured having had the residual frequency error removed over an interval of 3904 chips but the measurement interval over which this same residual frequency error should be judged is only defined over an interval of one timeslot (2560 chips). It is not possible to perform the two measurements over different intervals since the results can only be considered together. EVM by definition returns frequency

	error as a residual result and an independent frequency error measurement carried out over a shorter interval would have no defined limit for the allowable EVM. Note: A longer measurement interval for frequency error makes the 0.1 PPM requirement easier to pass.

Clauses affected:	⌘	6.3			
Other specs affected:	⌘	**Y** / **N** **X**	Other core specifications	⌘	
		X	Test specifications		34.121
		X	O&M Specifications		
Other comments:	⌘	Equivalent CRs in other Releases: CR327 cat. F to 25.101 v5.9.0			

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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 Error

The UE modulated carrier frequency shall be accurate to within ±0.1 PPM observed over a period of one timeslot compared to the carrier frequency received from the Node B. For the PRACH and PCPCH preambles the measurement interval is lengthened to 3904 chips (being the 4096 chip nominal preamble period less a 25 µs transient period allowance at each end of the burst). These signals will have an apparent error due to Node B frequency error and Doppler shift. In the latter case, signals from the Node B must be averaged over sufficient time that errors due to noise or interference are allowed for within the above ±0.1PPM figure. The UE shall use the same frequency source for both RF frequency generation and the chip clock.

~~**Table 6.2: Frequency Error**~~

~~**AFC**~~	~~**Frequency stability**~~
~~ON~~	~~within ± 0.1 PPM~~

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040100**

Munich, Germany 9 - 13 February 2004

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CHANGE REQUEST

⌘ **25.101** **CR** **332** ⌘ **rev** ⌘ Current version: **5.9.0** ⌘

*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:	⌘	Correction of a typo in section 9.3.2.2. (CQI Testing for UE Capability Categories 11 and 12)
Source:	⌘	RAN WG4
Work item code:	⌘	HSDPA-RF
Date:	⌘	23/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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:	⌘	A typo has crept into section 9.3.2.2 (CQI Testing for UE Capability Categories 11 and 12). This needs to be corrected
Summary of change:	⌘	In Table 9.28, the maximum BLER value for CQI median + 3 is changed from 60% to the originally intended value of 15%
Consequences if not approved:	⌘	The CQI test specification for UE capability categories 11 and 12 will be incorrect

Clauses affected:	⌘	9.3.2.2			
Other specs Affected:	⌘	**Y**	**N**		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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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.

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9.3.2.2 Minimum Requirement – UE capability categories 11,12

For the parameters specified in Table 9.27, the requirements are specified in terms of BLERs at particular reported CQIs when a fixed transport format given by CQI median as shown in Table 9.28. The BLER at a particular reported CQI is obtained by associating a particular CQI reference measurement period with HS-PDSCH subframe overlapping with the end of this CQI reference measurement period and calculating the fraction of erroneous HS-PDSCH subframes.

Table 9.27: Test Parameters for CQI test in fading: categories 11-12

Parameter	Unit	Test 1	Test 2
HS-PDSCH E_c / I_{or} (*)	dB	-8	-4
$\hat{I}_{or} / I_{oc}$	dB	0	5
I_{OC}	dBm/3.84 MHz	-60	
Phase reference	-	P-CPICH	
HS-SCCH_1 E_c / I_{or}	dB	-8.5	
DPCH E_c / I_{or}	dB	-6	
Maximum number of H-ARQ transmission	-	1	
Number of HS-SCCH set to be monitored	-	1	
CQI feedback cycle	ms	2	
CQI repetition factor	-	1	
HS-DSCH transmission pattern	-	"….XOOXOOX…." to incorporate inter-TTI=3 UEs, where "X" indicates TTI in which HS-PDSCH is allocated to the UE, and "O" indicates DTX	
Propagation Channel		Case 8	
Note1: Measurement power offset "Γ" is configured by RRC accordingly and as defined in [7] Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI is used. Other physical channel parameters are configured according to the CQI maping table described in TS25.214			

Table 9.28: Minimum requirement for CQI test in fading for categories 11-12

Reported CQI	Maximum BLER	
	Test 1	Test 2
CQI median	60%	60%
CQI median + 3	15%	15%~~60%~~

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040129**

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CHANGE REQUEST

⌘ **25.101** **CR** **333** ⌘ **rev** ⌘ Current version: **5.9.0** ⌘

*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:	⌘	Minimum Requirements for UE Adjacent Channel Selectivity
Source:	⌘	RAN WG4
Work item code:	⌘	TEI5
Date:	⌘	23/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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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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 Test parameters for Adjacent Channel Selectivity (ACS) in 25.101 are not sufficient as it is stated today. ACS requirement is today not written as general requirements since it is tested only at a single adjacent channel interferer point. Today an ACS requirement of 33dB is only tested with an adjacent channel interferer level of -52dBm. The UE behavior for interferer levels above -52dBm is currently not defined. Insufficient ACS capability with higher interferer levels may have an impact on coverage and capacity. Making the core requirements more general and having an additional ACS testpoint at higher adjacent interferer level is necessary.
Summary of change:	⌘	Test parameter for adjacent channel selectivity is added.
Consequences if not approved:	⌘	Network capacity and coverage could be negatively affected if Adjacent Channel Selectivity requirement is not applicaple up to the new testpoint as indicated in this CR.

Clauses affected:	⌘	7.5.1

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

Other comments:	⌘	Equivalent CRs in other Releases: CR334 cat. A to 25.101 v6.3.0

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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.

7.5 Adjacent Channel Selectivity (ACS)

Adjacent Channel Selectivity (ACS) is a measure of a receiver's ability to receive a W-CDMA signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the centre frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

7.5.1 Minimum requirement

~~The ACS shall be better than the value indicated in Table 7.4 for the test parameters specified in Table 7.5 where the BER shall not exceed 0.001.~~

The UE shall fulfil the minimum requirement specified in Table 7.4 for all values of an adjacent channel interferer up to –25 dBm.

However it is not possible to directly measure the ACS, instead the lower and upper range of test parameters are chosen in Table 7.5 where the BER shall not exceed 0.001.

Table 7.4: Adjacent Channel Selectivity

Power Class	Unit	ACS
3	dB	33
4	dB	33

Table 7.5: Test parameters for Adjacent Channel Selectivity

Parameter	Unit	~~Level~~Case 1	Case 2
DPCH_Ec	dBm/3.84 MHz	<REFSENS> + 14 dB~~-103~~	<REFSENS> + 41 dB
$\hat{I}_{or}$	dBm/3.84 MHz	<REF$\hat{I}_{or}$> + 14 dB~~-92.7~~	REF$\hat{I}_{or}$> + 41 dB
I_{oac} mean power (modulated)	dBm	-52	-25
F_{uw} (offset)	MHz	+5 or -5	+5 or -5
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)	20 (for Power class 3) 18 (for Power class 4)

NOTE: The I_{oac} (modulated) signal consists of the common channels needed for tests as specified in Table C.7 and 16 dedicated data channels as specified in Table C.6.

3GPP TSG RAN WG4 (Radio) Meeting #30 **R4-040130**

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CHANGE REQUEST

⌘ **25.101** **CR** **334** ⌘ **rev** ⌘ Current version: **6.3.0** ⌘

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

Title:	⌘	Minimum Requirements for UE Adjacent Channel Selectivity
Source:	⌘	RAN WG4
Work item code:	⌘	TEI5
Date:	⌘	23/02/2004
Category:	⌘	**A**
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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Use one of the following releases:

2	*(GSM Phase 2)*
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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:	⌘	The Test parameters for Adjacent Channel Selectivity (ACS) in 25.101 are not sufficient as it is stated today. ACS requirement is today not written as general requirements since it is tested only at a single adjacent channel interferer point. Today an ACS requirement of 33dB is only tested with an adjacent channel interferer level of -52dBm. The UE behavior for interferer levels above -52dBm is currently not defined. Insufficient ACS capability with higher interferer levels may have an impact on coverage and capacity. Making the core requirements more general and having an additional ACS testpoint at higher adjacent interferer level is necessary.
Summary of change:	⌘	Test parameter for adjacent channel selectivity is added.
Consequences if not approved:	⌘	Network capacity and coverage could be negatively affected if Adjacent Channel Selectivity requirement is not applicaple up to the new testpoint as indicated in this CR.

Clauses affected:	⌘	7.5.1

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

Other comments:	⌘	Equivalent CRs in other Releases: CR333 cat. F to 25.101 v5.9.0

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7.5 Adjacent Channel Selectivity (ACS)

Adjacent Channel Selectivity (ACS) is a measure of a receiver's ability to receive a W-CDMA signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the centre frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

7.5.1 Minimum requirement

~~The ACS shall be better than the value indicated in Table 7.4 for the test parameters specified in Table 7.5 where the BER shall not exceed 0.001.~~

The UE shall fulfil the minimum requirement specified in Table 7.4 for all values of an adjacent channel interferer up to –25 dBm.

However it is not possible to directly measure the ACS, instead the lower and upper range of test parameters are chosen in Table 7.5 where the BER shall not exceed 0.001.

Table 7.4: Adjacent Channel Selectivity

Power Class	Unit	ACS
3	dB	33
4	dB	33

Table 7.5: Test parameters for Adjacent Channel Selectivity

Parameter	Unit	~~Level~~Case 1	Case 2
DPCH_Ec	dBm/3.84 MHz	<REFSENS> + 14 dB~~-103~~	<REFSENS> + 41 dB
$\hat{I}_{or}$	dBm/3.84 MHz	<REF$\hat{I}_{or}$> + 14 dB~~-92.7~~	REF$\hat{I}_{or}$> + 41 dB
I_{oac} mean power (modulated)	dBm	-52	-25
F_{uw} (offset)	MHz	+5 or -5	+5 or -5
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)	20 (for Power class 3) 18 (for Power class 4)

NOTE: The I_{oac} (modulated) signal consists of the common channels needed for tests as specified in Table C.7 and 16 dedicated data channels as specified in Table C.6.