

TSG RAN Meeting #15

RP-020037

Cheju, Korea, 5 - 8 March 2002

Title: CRs (Rel-5) for WI "UE positioning enhancements for 1.28 Mcps TDD"

Source: TSG RAN WG4

Agenda Item: 9.5.2

RAN4 Tdoc	Spec	CR	Rev	Phase	Title	Cat	Curr Ver	New Ver
R4-020512	25.123	169	1	Rel-5	UE Positioning enhancements for 1.28 Mcps TDD	B	4.4.0	5.0.0

CHANGE REQUEST

⌘ **25.123 CR 169** ⌘ rev **1** ⌘ Current version: **4.4.0** ⌘

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

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

Title:	⌘ UE Positioning enhancement for 1.28Mcps TDD		
Source:	⌘ RAN WG4		
Work item code:	⌘ LCS-128Pos	Date:	⌘ 1/2/2002
Category:	⌘ B	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		REL-4 (Release 4)
			REL-5 (Release 5)

Reason for change:	⌘ During the WI "UE positioning enhancements for 1.28 Mcps TDD" for Release 5 it has been agreed that the new measurement Angle of Arrival (AOA) for Basestations is included in TS 25.225. The requirements on the accuracy and the mapping on the AOA measurement have been agreed by RAN4#20 to be defined according to R4-011399.
Summary of change:	⌘ Inclusion of accuracy requirements and range/mapping definitions to AOA measurement according to changes approved by Ran4#20.
Consequences if not approved:	⌘ The AOA measurement as defined by TS 25.225 is lacking the accuracy requirements and range/mapping definitions. Isolated Impact Analysis: Inclusion of new requirement according to TR 25.859. Would not affect implementations behaving like indicated in the CR, would affect implementations that do not behave like indicated in the CR.

Clauses affected:	⌘ 9.2.1.13 (new)
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/>
	<input checked="" type="checkbox"/> Test specifications ⌘ <input type="checkbox"/>
	<input type="checkbox"/> O&M Specifications ⌘ <input type="checkbox"/>
Other comments:	⌘ <input type="text"/>

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.

- 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.

9.2.1.12 SFN-SFN observed time difference

The measurement period shall be 100 ms.

9.2.1.12.1 Accuracy requirements

9.2.1.12.1.1 3.84 Mcps TDD option

Table 9.44I: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
SFN-SFN observed time difference	chip	+/-0,5	-1280 ... +1280

9.2.1.12.1.2 1.28 Mcps TDD option

Table 9.44J: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions
			Range [chips]
SFN-SFN observed time difference	Chip	+/- 0.125	-6400 ... +6400

9.2.1.12.2 Range/mapping

9.2.1.12.2.1 3.84 Mcps TDD option

The reporting range for *SFN-SFN observed time difference* is from -1280 ... +1280 chip.

In table 9.44K mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44K

Reported value	Measured quantity value	Unit
SFN-SFN_TIME_00000	SFN-SFN observed time difference < -1280,0000	chip
SFN-SFN_TIME_00001	-1280,0000 ≤ SFN-SFN observed time difference < -1279,9375	chip
SFN-SFN_TIME_00002	-1279,9375 ≤ SFN-SFN observed time difference < -1279,8750	chip
...
SFN-SFN_TIME_40959	1279,8750 ≤ SFN-SFN observed time difference < 1279,9375	chip
SFN-SFN_TIME_40960	1279,9375 ≤ SFN-SFN observed time difference < 1280,0000	chip
SFN-SFN_TIME_40961	1280,0000 ≤ SFN-SFN observed time difference	chip

9.2.1.12.2.2 1.28 Mcps TDD option

The reporting range for *SFN-SFN observed time difference* is from -6400 ... +6400 chip.

In table 9.44L mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44L

Reported value	Measured quantity value	Unit
SFN-SFN_TIME_00000	SFN-SFN observed time difference < -6400,00	chip
SFN-SFN_TIME_00001	-6400,00 ≤ SFN-SFN observed time difference < -6399,75	chip
SFN-SFN_TIME_00002	-6399,75 ≤ SFN-SFN observed time difference < -6399,50	chip
...
SFN-SFN_TIME_51199	6399,50 ≤ SFN-SFN observed time difference < 6399,75	chip
SFN-SFN_TIME_51200	6399,75 ≤ SFN-SFN observed time difference < 6400,00	chip
SFN-SFN_TIME_51201	6400,00 ≤ SFN-SFN observed time difference	chip

9.2.1.13 AOA measurement for UE positioning for 1.28Mcps TDD option

AOA defines the angle of arrival of the signals from a user at the antenna. The reference direction for this measurement shall be the North. The measurement period shall be 200ms.

9.2.1.13.1 Accuracy requirements

Eight accuracy classes are defined for UTRAN AOA measurement, i.e. accuracy class A to H.

Table 9.44M

Parameter	Unit	Accuracy [degree]	Conditions
<u>UTRAN AOA measurement for UE positioning</u>	<u>degree</u>	<u>Accuracy Class A: +/- 180 degree</u> <u>Accuracy Class B: +/- 90 degree</u> <u>Accuracy Class C: +/- 60 degree</u> <u>Accuracy Class D: +/- 20 degree</u> <u>Accuracy Class E: +/- 10 degree</u> <u>Accuracy Class F: +/- 5 degree</u> <u>Accuracy Class G: +/- 2 degree</u> <u>Accuracy Class H: +/- 1 degree</u>	<u>Over the full range</u>

9.2.1.13.2 Range/mapping

The reporting range for AOA measurement is from 0 ... 360 degree.

In table 9.44N mapping of the measured quantity is defined.

Table 9.44N

Reported value	Measured quantity value	Unit
<u>AOA_ANGLE_000</u>	<u>0 ≤ AOA_ANGLE < 0,5</u>	<u>degree</u>
<u>AOA_ANGLE_001</u>	<u>0,5 ≤ AOA_ANGLE < 1</u>	<u>degree</u>
<u>AOA_ANGLE_002</u>	<u>1 ≤ AOA_ANGLE < 1,5</u>	<u>degree</u>
...
<u>AOA_ANGLE_717</u>	<u>358,5 ≤ AOA_ANGLE < 359</u>	<u>degree</u>
<u>AOA_ANGLE_718</u>	<u>359 ≤ AOA_ANGLE < 359,5</u>	<u>degree</u>
<u>AOA_ANGLE_719</u>	<u>359,5 ≤ AOA_ANGLE < 360</u>	<u>degree</u>

9.2.2 Performance for UTRAN measurements in downlink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off $\alpha = 0,22$ and a bandwidth equal to the chip rate.

9.2.2.1 Transmitted carrier power

The measurement period shall be 100 ms.

9.2.2.1.1 Accuracy requirements

Table 9.45 Transmitted carrier power accuracy

Parameter	Unit	Accuracy [% units]	Conditions
			Range
Transmitted carrier power	%	± 10	For $10\% \leq$ Transmitted carrier power $\leq 90\%$

9.2.2.1.2 Range/mapping

The reporting range for *Transmitted carrier power* is from 0 ... 100 %.

In table 9.46 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.46

Reported value	Measured quantity value	Unit
UTRAN_TX_POWER_000	Transmitted carrier power = 0	%
UTRAN_TX_POWER_001	$0 < \text{Transmitted carrier power} \leq 1$	%
UTRAN_TX_POWER_002	$1 < \text{Transmitted carrier power} \leq 2$	%
UTRAN_TX_POWER_003	$2 < \text{Transmitted carrier power} \leq 3$	%
...
UTRAN_TX_POWER_098	$97 < \text{Transmitted carrier power} \leq 98$	%
UTRAN_TX_POWER_099	$98 < \text{Transmitted carrier power} \leq 99$	%
UTRAN_TX_POWER_100	$99 < \text{Transmitted carrier power} \leq 100$	%

9.2.2.2 Transmitted code power

The measurement period shall be 100 ms.

9.2.2.2.1 Absolute accuracy requirements

Table 9.47 Transmitted code power absolute accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
Transmitted code power	dB	$[\pm 3]$	Over the full range

9.2.2.2.2 Relative accuracy requirements

The relative accuracy of transmitted code power is defined as the transmitted code power measured at one dedicated radio link compared to the transmitted code power measured from a different dedicated radio link in the same cell.

Table 9.48 Transmitted code power relative accuracy

Parameter	Unit	Accuracy [dB]	Conditions
			Range
Transmitted code power	dB	± 2	Over the full range

9.2.2.2.3 Range/mapping

The reporting range for *Transmitted code power* is from -10 ... 46 dBm.

In table 9.49 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.49

Reported value	Measured quantity value	Unit
UTRAN_CODE_POWER_010	$-10,0 \leq \text{Transmitted code power} < -9,5$	dBm
UTRAN_CODE_POWER_011	$-9,5 \leq \text{Transmitted code power} < -9,0$	dBm
UTRAN_CODE_POWER_012	$-9,0 \leq \text{Transmitted code power} < -8,5$	dBm
...
UTRAN_CODE_POWER_120	$45,0 \leq \text{Transmitted code power} < 45,5$	dBm
UTRAN_CODE_POWER_121	$45,5 \leq \text{Transmitted code power} < 46,0$	dBm
UTRAN_CODE_POWER_122	$46,0 \leq \text{Transmitted code power} < 46,5$	dBm