TSG RAN Working Group 1 meeting #11 TSGR1#11(00)0332
29 February – 3 March 2000
San Diego, California, USA

Source: Nokia

Title: CR 25.215-043r1 : Propagation delay

Document for: Approval

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1 Introduction

UTRAN Propagation delay measurement was discussed in TSG RAN Ad Hoc meeting on RRM in Turin on February 9th 2000. Discussion was based on Nokia contribution RPA000039, which was approved in the meeting. The attached CR is provided to add the UTRAN Propagation delay measurement in TS25.215. This measurement has also already accepted into WG3 specifications.

The benefit of this measurement is that if the propagation delay is measured during RACH access, the DPCH setup is easier, since the search window can then be smaller.

2 Definition of the measurement

At the moment in the WG3 specification, 25.435 , UTRAN Iub Interface User Plane Protocols for CCH Data Streams, section 6.2.6.5 contains already following description:

6.2.6.5 [FDD - Propagation delay]
Description: One-way radio interface delay as measured during
RACH access
Value range: {0 - 765 chips}
Granularity: 3 chips
Field length: 8 bits

The CR to 25.215, which is attached to this contribution, is defined in such way that it is aligned with 25.435 range and resolution. Thus the measurement is scaled so that the value range starts from 0. Thus the measurement is defined as follows:

Propagation delay is defined as one-way propagation delay as measured during PRACH access:
Propagation delay = $(T_{RX} - T_{TX} - 2560)/2$, where
T_{TX} = The time of AICH access slot (n-2-AICH Transmission Timing). The time of AICH access slot (n-2-AICH transmission timing), where $0 \leq$(n-2-AICH Transmission Timing)≤ 14 and AICH_Transmission_Timing can have values 0 or 1.
T_{RX} = The time of reception of the beginning (the first significant path) of the PRACH message from the UE at PRACH access slot n.

3 Conclusion

It is proposed to include the UTRAN Propagation delay measurement to 25.215, as defined in the CR attached.

3GPP TSG-RAN WG1 meeting #11 **Document** ***R1(00)0332***
San Diego, CA, USA, 29th Feb – 3rd Mar 2000

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.215 **CR** **043r1** Current Version: 3.1.1

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG RAN#7 *list TSG meeting no. here ↑* for approval **X** for information *(only one box should 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 [X] Core Network [ ]

Source: TSG RAN WG1 **Date:** 29.2.2000

Subject: UTRAN Propagation delay

3G Work item:

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	X
C	Functional modification of feature	
D	Editorial modification	

Reason for change: To implement a decision made in TSG RAN Ad Hoc meeting on RRM, this CR adds UTRAN Propagation delay measurement to 25.215. This measurement is already included in WG3 specifications.

Clauses affected: 5.2.9, new section added

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:

5.2.6 Physical channel BER

Definition	Type 1: Measured on the DPDCH: The physical channel BER is an estimation of the average bit error rate (BER) before channel decoding of the DPDCH data after RL combination in Node B. Type 2: Measured on the DPCCH: The Physical channel BER is an estimation of the average bit error rate (BER) on the DPCCH after RL combination in Node B. It shall be possible to report a physical channel BER estimate of type 1 or of type 2 or of both types at the end of each TTI for the transferred TrCh's, e.g. for TrCh's with a TTI of x ms a x ms averaged physical channel BER shall be possible to report every x ms.
Range/mapping	The Physical channel BER shall be reported for 0 ≤ Physical channel BER ≤ 1 in the unit BER_dB where: BER_dB_00: Physical channel BER = 0 BER_dB_01: -∞ < Log10(Physical channel BER) < -4.03 BER_dB_02: -4.03 ≤ Log10(Physical channel BER) < -3.965 BER_dB_03: -3.965 ≤ Log10(Physical channel BER) < -3.9 ... BER_dB_61: -0.195 ≤ Log10(Physical channel BER) < -0.13 BER_dB_62: -0.13 ≤ Log10(Physical channel BER) < -0.065 BER_dB_63: -0.065 ≤ Log10(Physical channel BER) ≤ 0

5.2.7 Round trip time

NOTE: The relation between this measurement and the TOA measurement defined by WG2 needs clarification.

Definition	Round trip time (RTT), is defined as RTT = $T_{RX} – T_{TX}$, where T_{TX} = The time of transmission of the beginning of a downlink DPCH frame to a UE. T_{RX} = The time of reception of the beginning (the first significant path) of the corresponding uplink DPCCH/DPDCH frame from the UE. Note: The definition of "first significant path" needs further elaboration. Measurement shall be possible on DPCH for each RL transmitted from an UTRAN access point and DPDCH/DPCCH for each RL received in the same UTRAN access point.
Range/mapping	The Round trip time is given with the resolution of 0.25 chip with the range [876, …, 2923.75] chips.

5.2.8 UTRAN GPS Timing of Cell Frames for LCS

Definition	The timing between cell j and GPS Time Of Week. $T_{UTRAN-GPSj}$ is defined as the time of occurrence of a specified UTRAN event according to GPS time. The specified UTRAN event is the beginning of a particular frame (identified through its SFN) in the first significant multipath of the cell j CPICH, where cell j is a cell within the active set.
Applicable for	Connected Intra, Connected Inter
Range/mapping	The resolution of $T_{UTRAN-GPSj}$ is 1μS. The range is from 0 to $6.04×10^{11}$ μS.

5.2.9 Propagation delay

Definition	Propagation delay is defined as one-way propagation delay as measured during PRACH access: Propagation delay = $(T_{RX} - T_{TX} - 2560)/2$, where T_{TX} = The time of AICH access slot (n-2-AICH transmission timing), where 0≤(n-2-AICH Transmission Timing)≤14 and AICH_Transmission_Timing can have values 0 or 1. T_{RX} = The time of reception of the beginning (the first significant path) of the PRACH message from the UE at PRACH access slot n. Note: The definition of "first significant path" needs further elaboration.
Range/mapping	The Propagation delay is given with the resolution of 3 chips with the range [0, …, 765] chips. The Propagation delay shall be reported in the unit PROP_DELAY where: PROP_DELAY_000: 0 chip ≤ Propagation delay < 3 chip PROP_DELAY_001: 3 chip ≤ Propagation delay < 6 chip PROP_DELAY_002: 6 chip ≤ Propagation delay < 9 chip ... PROP_DELAY_252: 756 chip ≤ Propagation delay < 759 chip PROP_DELAY_253: 759 chip ≤ Propagation delay < 762 chip PROP_DELAY_254: 762 chip ≤ Propagation delay < 765 chip PROP_DELAY_255: 765 chip ≤ Propagation delay