3GPP TSG-RAN Working Group 1 Meeting No. 11
San Diego, USA, 28 FEB 2000 - 03 MAR 2000

Agenda Item:	Ad Hoc 1
Source:	Nokia, Siemens
Title:	Changes to the section on Timing Advance in TS25.224
Document for:	Approval

The aim of the CR presented below is to clarify the existing section on the Timing advance in the TS25.224.

The following changes are proposed:

➢ Removal of the first sub-section (4.3.1) numbering. This is done to clarify that the use of UL synchronisation is strictly optional, and this is also indicated by the change of the first sentence in the current section 4.3.2.

➢ The last two sentences from the first paragraph are removed as they do not add any value to the physical layer specifications and no such restrictions are currently specified in the higher layer specifications.

➢ Also, a statement is added which should clarify when the UE is supposed to use the received TA command. This is beneficial information for delay estimation and for location based services. After the last meeting it was pointed out that it would be beneficial if the Node B would also know exactly when to expect the TA change. Since the TA message is generated at the RNC the Node B has no means of knowing that. In view of that a further revision has been made which makes the update moment a function of the SFN.

➢ Finally, the TA granularity is changed in the section 4.3.2 according to the WG4 requirements.

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Document **R1-00-0291**

e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

25.224 CR **007r2**	Current Version: **V3.1.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑　　　　*↑ CR number as allocated by MCC support team*

For submission to:　**TSG RAN #7**
list expected approval meeting # here
↑

for approval	**X**		strategic		*(for SMG*
for information			non-strategic		*use only)*

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

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

Source:	Nokia, Siemens	**Date:**	23.02.2000

Subject:　Clarifications on the UL synchronisation and Timing advance.

Work item:　TS25.224

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

Reason for change:　Clarifications to the current description on the use of the Timing Advance are needed.

Clauses affected:　4.3

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other GSM 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

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4.3   Timing Advance

4.3.1 Without UL Synchronization

UTRAN may adjust the UE transmission timing with timing advance. ~~The timing of transmissions from the UE is adjusted according to timing advance values received from the UTRAN~~. The initial value for timing advance will be determined in the UTRAN by measurement of the timing of the PRACH. The required timing advance will be represented as an 6~~8~~ bit number (0-63~~255~~) being the multiple of 4 chips which is nearest to the required timing advance. ~~The maximum allowed value may be limited by the operator to a value lower than 255, if required or the function may be disabled. A UE cannot operate beyond the range set by the maximum value of timing advance.~~

When Timing Advance is used t~~The~~ UTRAN will continuously measure the timing of a transmission from the UE and send the necessary timing advance value. On receipt of this value the UE ~~will~~ shall adjust the timing of its transmissions accordingly in steps of ±4chips. The transmission of TA values is done by means of higher layer messages. Upon receiving the TA command the UE shall adjust its transmission timing according to the timing advance command at the beginning of the next frame that fulfils the SFN Mod20 = 0 criteria and which does not occur sooner than 10 frames after the TTI period for the DCCH carrying the timing advance command ended.

When TDD to TDD handover takes place the UE shall transmit in the new cell with timing advance TA adjusted by the relative timing difference Δt between the new and the old cell:

$$TA_{new} = TA_{old} + 2\Delta t$$

4.3.1~~2~~   Timing advance w~~W~~ith UL Synchronization

~~With~~ If UL Synchronization is used, the timing advance is sub-chip granular and with high accuracy in order to enable synchronous CDMA in the UL. The required timing advance will be represented as a multiple of 1/4~~8~~ chips.

The UTRAN will continuously measure the timing of a transmission from the UE and send the necessary timing advance value. On receipt of this value the UE will adjust the timing of its transmissions accordingly in steps of ±1/4~~8~~ chips. ~~The transmission of TA values is ffs.~~

Support of UL synchronisation is optional for the UE.