

Busan, Korea, Mai 21st - Mai 25th 2001

Agenda Item: R4 CRs
Source: Siemens AG
Title: Correction of Timing Advance section for 3.84 Mcps TDD
Document for: Approval

Introduction

In the current version of the TDD specification, there exists a possibility in WG1 to support uplink synchronization in 3.84 Mcps TDD. However this method is not supported by higher layers and therefore it is deleted in the present CR in order to be in line with specifications of other WG's. The correction is necessary, because there exists no possibility to indicate to the UE, how to interpret the timing advance command i.e. whether the stepsize should be ± 1 chip or $\pm 1/8$ chip.

CR-Form-v4

CHANGE REQUEST

⌘ **25.224 CR 057** ⌘ 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:	⌘ Correction of Timing Advance section for 3.84 Mcps TDD		
Source:	⌘ Siemens AG		
Work item code:	⌘	Date:	⌘ 15.05.2001
Category:	⌘ F	Release:	⌘ REL-4
	Use <u>one</u> 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 <u>one</u> 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:	⌘ misalignment between WG1 and WG2 specs
Summary of change:	⌘ Removal of section for Timing Advance with UL Synchronization for 3.84 Mcps TDD, since not supported by higher layers
Consequences if not approved:	⌘ misalignment between WG1 and WG2 specs

Clauses affected:	⌘ 4.3.1 removed	
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> 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.
- 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/](http://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.

4.3 Timing Advance

UTRAN may adjust the UE transmission timing with timing advance. The initial value for timing advance (TA_{phys}) will be determined in the UTRAN by measurement of the timing of the PRACH. The required timing advance will be represented as an 6 bit number (0-63) 'UL Timing Advance' TA_{ul} , being the multiplier of 4 chips which is nearest to the required timing advance (i.e. $TA_{\text{phys}} = TA_{\text{ul}} \times 4$ chips).

When Timing Advance is used 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 shall adjust the timing of its transmissions accordingly in steps of ± 4 chips. 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 frame number specified by higher layer signaling. The UE is signaled the TA value in advance of the specified frame activation time to allow for local processing of the command and application of the TA adjustment on the specified frame. Node-B is also signaled the TA value and radio frame number that the TA adjustment is expected to take place.

If TA is enabled by higher layers, after handover 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:

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

4.3.1 ~~Timing advance with UL Synchronization~~

~~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 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 $\pm 1/4$ chips.~~

~~Support of UL synchronisation is optional for the UE.~~