**3GPP TSG RAN Meeting #13**
**Beijing, China, 18th – 21st , September, 2001**

***RP-010707***

CR-Form-v3

# CHANGE REQUEST

⌘ **25.225** **CR** **031** ⌘ rev **1** ⌘ Current version: **4.1.0** ⌘

*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 **X** Radio Access Network **X** Core Network ☐

| | | |
|---|---|---|
| ***Title:*** | ⌘ | RxTiming Deviation for 1.28 Mcps TDD |
| ***Source:*** | ⌘ | TSG RAN WG1 |
| ***Work item code:*** | ⌘ | LCRTDD-Phys |
| ***Date:*** | ⌘ | 22.08.2001 |
| ***Category:*** | ⌘ | **B** |
| ***Release:*** | ⌘ | REL-4 |

*Use one of the following categories:*
***F*** *(essential 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)*

***Reason for change:*** ⌘ Correction of Timing advance measurement

***Summary of change:*** ⌘
- Introduction of the measurement RxTiming deviation to make use of the UE measurement T_ADV
- Clarifcation of the reference time slot for the UE measurement T_ADV for the case that the UE uses more than one uplink timeslot (which can be controlled individually by different SS commands)

***Consequences if not approved:*** ⌘
- No useful interpretation of the measurement $T_{ADV}$ possible for UE positioning, because possible uncertainty too high
- misinterpretation of measurement $T_{ADV}$ in case the UE uses multiple Uplink timeslots, because it is currently not clear, which UL slot has been used for doing the measurement

***Clauses affected:*** ⌘

***Other specs affected:*** ⌘

| | | |
|---|---|---|
| ☐ | Other core specifications | ⌘ TS 25.331 (CR 973, R2-011873.zip)<br>TS 25.433 (CR 518, R3-012400.zip)<br>TS 25.423 (CR 461, R3-012401.zip) |
| ☐ | Test specifications | |
| ☐ | O&M Specifications | |

***Other comments:*** ⌘ 5.1.4, 5.2.8

**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.

## 5.1.14 Timing Advance ($T_{ADV}$) for 1.28 Mcps TDD

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|---|---|
| **Definition** | The 'timing advance ($T_{ADV}$)' is the time difference<br><br>$T_{ADV} = T_{RX} - T_{TX}$<br><br>Where<br>$T_{RX}$: calculated beginning time of the first ~~a certain~~ uplink time slot in the first subframe used by the UE with the UE timing according to the reception of a certain downlink time slot (for the timing it is assumed that the time slots within a sub-frame are scheduled like given in the frame structure described in 25.221 chapter 6.1)<br><br>$T_{TX}$: time of the beginning of the same uplink time slot by the UE (for the timing it is assumed that the time slots within a sub-frame are scheduled like given in the frame structure described in 25.221 chapter 6.1) |
| | |

Note: This measurement can be used for UE positioning~~uplink synchronisation or location services~~.

## 5.2.8 RX Timing Deviation ~~(for the 3.84 Mcps option)~~

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|---|---|
| **Definition** | 'RX Timing Deviation' is the time difference $T_{RXdev} = T_{TS} - T_{RXpath}$ in chips, with<br>$T_{RXpath}$: time of the reception in the Node B of the first detected uplink path (in time) to be used in the detection process. The reference point for $T_{RXpath}$ shall be the Rx antenna connector. For 1.28 Mcps TDD only the first UL timeslot in the first subframe used by the UE is used for the calculation of $T_{RXpath}$.<br>$T_{TS}$: time of the beginning of the respective slot according to the Node B internal timing |

NOTE: This measurement can be used for timing advance calculation or location services.

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***R1-01-0783***

CR-Form-v3

# CHANGE REQUEST

⌘ **25.225** **CR** **032** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

*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 **X** Radio Access Network **X** Core Network ☐

| | | |
|---|---|---|
| ***Title:*** | ⌘ | SFN-SFN type 1 for 1.28 Mcps TDD |
| ***Source:*** | ⌘ | TSG RAN WG1 |
| ***Work item code:*** | ⌘ | LCRTDD-Phys |
| ***Date:*** | ⌘ | 22.08.2001 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | REL-4 |

*Use one of the following categories:*
***F*** *(essential 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)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | In the definition of the measurement it has to be distinguished between 3.84 and 1.28 Mcps TDD |
| ***Summary of change:*** | ⌘ | Correction of values for 1.28 Mcps TDD |
| ***Consequences if not approved:*** | ⌘ | Incorrect definition for 1.28 Mcps TDD |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 5.1.10 |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications ⌘<br>☐ Test specifications<br>☐ 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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

## 5.1.10 SFN-SFN observed time difference

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|---|---|
| **Definition** | SFN-SFN observed time difference is the time difference of the reception times of frames from two cells (serving and target) measured in the UE and expressed in chips. It is distinguished by two types. Type 2 applies if the serving and the target cell have the same frame timing.<br><br>The reference point for the SFN-SFN observed time difference type 1 and 2 shall be the antenna connector of the UE.<br><br>**Type 1:**<br><br>SFN-SFN observed time difference = $\begin{cases} OFF \times 12800 + T_m \text{ in chips} & \text{for } 1.28 \text{ Mcps TDD} \\ OFF \times 38400 + T_m \text{ in chips} & \text{for } 3.84 \text{ Mcps TDD} \end{cases}$<br><br>~~$OFF \times 38400 + T_m$ in chips,~~ where:<br><br>$T_m$ = $T_{RxSFNi}$ - $T_{RxSFNk}$, given in chip units<br><br>with the range $\begin{cases} [0,1,\ldots,12799] \text{ chips} & \text{for } 1.28 \text{ Mcps TDD} \\ [0,1,\ldots,38399] \text{chips} & \text{for } 3.84 \text{ Mcps TDD} \end{cases}$ ~~[0, 1, …, 38399] chips~~<br><br>$T_{RxSFNi}$ = time of start (defined by the first detected path in time) of the received frame $SFN_i$ of the serving TDD cell i.<br><br>$T_{RxSFNk}$ = time of start (defined by the first detected path in time) of the received frame $SFN_k$ of the target UTRA cell k received most recently in time before the time instant $T_{RxSFNi}$ in the UE. If this frame $SFN_k$ of the target UTRA cell is received exactly at $T_{RxSFNi}$ then $T_{RxSFNk} = T_{RxSFNi}$ (which leads to $T_m$=0).<br><br>OFF = ($SFN_i$- $SFN_k$) mod 256, given in number of frames with the range [0, 1, …, 255] frames<br><br>SFNi = system frame number for downlink frame from serving TDD cell i in the UE at the time $T_{RxSFNi}$.<br><br>SFNk = system frame number for downlink frame from target UTRA cell k received in the UE at the time $T_{RxSFNk}$.(for FDD: the P-CCPCH frame)<br><br>The reference point for the SFN-SFN observed time difference type 1 shall be the antenna connector of the UE.<br><br>**Type 2:**<br>SFN-SFN observed time difference = $T_{RxTSk}$ - $T_{RxTSi}$, in chips, where<br><br>$T_{RxTSi}$ : time of start (defined by the first detected path in time) of a timeslot received from the serving TDD cell i.<br><br>$T_{RxTSk}$ : time of start (defined by the first detected path in time) of a timeslot received from the target UTRA cell k that is closest in time to the start of the timeslot of the serving TDD cell i.<br><br>The reference point for the SFN-SFN observed time difference type 2 shall be the antenna connector of the UE. |
| **Applicable for** | idle mode, connected mode (intra-frequency), connected mode (inter-frequency) |