# TSG-RAN Meeting #14
# Kyoto, Japan, 11 – 14, December, 2001

***RP-010750***

**Title:** **Agreed CR (Rel-4) to TS 25.225**

**Source:** **TSG-RAN WG1**

**Agenda item:** **8.1.4**

| No. | Spec | CR | Rev | R1 T-doc | Subject | Release | Cat | W/I Code | V_old | V_new |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25.225 | 038 | 1 | R1-01-1259 | Introduction of new "UE GPS code phase" measurement | Rel-4 | F | TEI4 | 4.2.0 | 4.3.0 |
| 2 | 25.225 | 042 | - | R1-01-1151 | Corrections in annex A.2 in TS 25.225 | Rel-4 | F | LCRTDD-Phys | 4.2.0 | 4.3.0 |

**3GPP TSG RAN Meeting #14**
**Kyoto, Japan, 11th-14th, December, 2001**

***R1-01-1259***

*CR-Form-v4*

# CHANGE REQUEST

⌘ **25.225 CR 038** ⌘ rev **1** ⌘ Current version: **4.2.0** ⌘

*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 [X] ME/UE [X] Radio Access Network [X] Core Network [ ]

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Introduction of new "UE GPS code phase" measurement |
| ***Source:*** | ⌘ | TSG RAN WG1 |
| ***Work item code:*** | ⌘ | TEI4 |
| ***Date:*** | ⌘ | 20.11.2001 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | REL-4 |

*Use one 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 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:*** | ⌘ | Inconsistency between WG2 TS25.305, 25.331 and TS 25.225. WG4 can only proceed with the development of performance requirements for the A-GPS method, if this measurement is defined in TSG RAN WG1, see LS in R1-01-1004 |
| ***Summary of change:*** | ⌘ | Introduction of a new UE measurement.<br><br>Changes in Revision 1 of the CR:<br>- Range information removed<br>- Applicability of "Connected Inter" state removed<br><br>Isolated Impact Analysis:<br><br>This proposed change corrects specific isolated functionality where a component of this functionality was missing in the specifications. This CR, would not affect implementations behaving as indicated in the CR, would affect implementations supporting the corrected functionality otherwise. |
| ***Consequences if not approved:*** | ⌘ | Misalignment between WG1 and WG2, delay of the work in WG4. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | New section 5.1.15 | | |
| ***Other specs affected:*** | ⌘ | [ ] Other core specifications<br>[ ] Test specifications<br>[ ] O&M Specifications | ⌘ | |
| ***Other comments:*** | ⌘ | | | |

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

| | |
|---|---|
| **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 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.

## 5.1.15 UE GPS code phase

| | |
|---|---|
| **Definition** | The whole and fractional phase of the spreading code of the $i^{th}$ GPS satellite signal. The reference point for the GPS code phase shall be the antenna connector of the UE. |
| **Applicable for** | connected mode (intra-frequency) |

**3GPP TSG RAN Meeting #14**
**Kyoto, Japan, 11th-14th, December, 2001**

***R1-01-1151***

CR-Form-v4

# CHANGE REQUEST

⌘ **25.225** **CR** **042** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

*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:*** | ⌘ | Corrections in annex A.2 in TS 25.225 |
| ***Source:*** | ⌘ | TSG RAN WG1 |
| ***Work item code:*** | ⌘ | LCRTDD-Phys |
| ***Date:*** | ⌘ | Nov.12th, 2001 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | REL-4 |

*Use one 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 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:*** | ⌘ | The title of table A.4 in A.2 is incorrect by using the word frame. |
| ***Summary of change:*** | ⌘ | The title of table A.4 in A.2 is corrected. |
| ***Consequences if not approved:*** | ⌘ | Incorrect definition for 1.28Mcps TDD will cause confusion. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A.2 | | |
| ***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.

# A.2 Low data rate traffic using 1 uplink and 1 downlink slot (for the 1.28 Mcps option)

NOTE: The section evaluates the time to acquire the FCCH if all idle slots are devoted to the tracking of a FCCH burst, meaning that no power measurements is done concurrently. The derived figures are better than those for GSM. The section does not derive though any conclusion. A conclusion may be that the use of the idle slots is a valid option. An alternative conclusion may be that this is the only mode to be used, removing hence the use of the slotted frames for low data traffic or the need for a dual receiver, if we were to considering the monitoring of GSM cells only, rather than GSM, TDD and FDD.

If a single synthesiser UE uses only one uplink and one downlink slot, e.g. for speech communication, the UE is not in transmit or receive state during 5 slots in each frame. According to the timeslot numbers allocated to the traffic, this period can be split into two continuous idle intervals A and B as shown in the figure below.

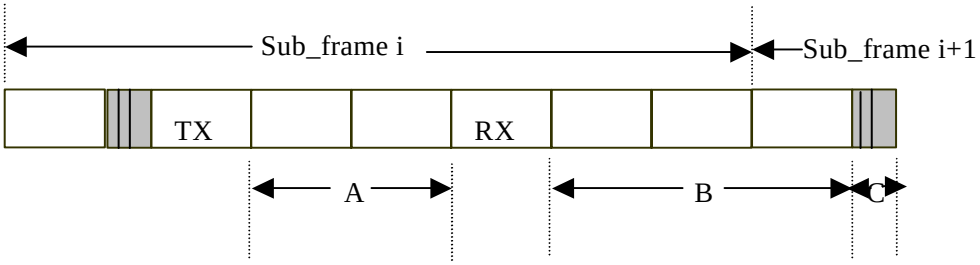


**Figure A.2: Possible idle periods in a subframe with two occupied timeslots**

A is defined as the number of idle slots between the Tx and Rx slots and B the number of idle slots between the Rx and Tx slots. It is clear that A+B=5 time slots and C is equal to the DwPTS+GP+UpPTS.

In the scope of low cost terminals, a [0.5] ms period is supposed to be required to perform a frequency jump from 1.28Mcps TDD to GSM and vice versa. This lets possibly two free periods of A*Timeslots-1 ms and B*Timeslots+C-1 ms during which the mobile station can monitor GSM, Timeslots being the slot period.

Following table evaluates the average synchronisation time and maximum synchronisation time, where the announced synchronisation time corresponds to the time needed to find the FCCH. The FCCH is supposed to be perfectly detected which means that it is entirely present in the monitoring window. The FCCH being found the SCH location is unambiguously known from that point. All the 5 idle slots and the DwPTS+GP+UpPTS are assumed to be devoted to FCCH tracking and the UL traffic is supposed to occupy the time slot 1.

**Table A.4: example- of average and maximum synchronisation time with two busy timeslots per sub-frame and with 0.5 ms switching time**

| Downlink time slot number | Number of free Timeslots in A | Number of free Timeslots in B | Average synchronisation time (ms) | Maximum synchronisation time (ms) |
|---|---|---|---|---|
| 0 | 5 | 0 | 83 | 231 |
| 2 | 0 | 5 | 75 | 186 |
| 3 | 1 | 4 | 98 | 232 |
| 4 | 2 | 3 | 185 | 558 |
| 5 | 3 | 2 | 288 | 656 |
| 6 | 4 | 1 | 110 | 371 |

(*) All simulations have been performed with a random initial delay between GSM frames and 1.28Mcps TDD sub-frames.

Each configuration of Timeslots allocation described above allows a monitoring period sufficient to acquire synchronisation.

NOTE: Considering about the frame structure of 1.28Mcps TDD, there are total 7 timeslots in each sub-frame that can be used as data traffic. If more than 1 uplink and/or 1 downlink TDD timeslot are used for data traffic, that means it will occupy at least 3 time slots, equal to 0.675*3=2.205ms. And more time slots for traffic data means more switching point are needed to switch between the GSM and the 1.28Mcps TDD. As it was mentioned above, each switching will take 0.5ms. As a result, the idle time left for monitoring the GSM will be very little. So monitoring GSM from 1.28Mcps TDD under this situation will be considered in the future. It will need more carefully calculation and simulation.