TSG-RAN Working Group 1 meeting #10          **TSGR1#10(00)0065**
Beijing, China
January 18 – January 21, 2000

**Agenda item:**     AH 8 / AH 16

**Source:**     Nokia

**Title:**     CR 25.215-032: Clarification of compressed mode parameters

**Document for:**     Decision

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For doing some measurements, e.g. FDD-FDD interfrequency cell search, the transmission gap distance (TGD) has to be set to fractions of full frames to provide optimum performance. Thus, it is proposed to change it to number of slots instead number of frames.

It was not clearly stated that the numeric values are integers. This has been added.

Some parameters were listed twice, once in a section describing a gap, then again when describing a pattern. This has been simplified and redundancy removed.

There were some leftover statements about fixed and flexible gap positions. As this is not dependant on the number of gaps, but simply considered a parameter, these sentences where removed.

Finally, a sentence referring to the now-deleted section 6.1.1.3 was removed.

**3GPP/SMG Meeting #10**
**Beijing, China, 18-21 Jan 2000**

*Document* **R1-00-0065**

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

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## 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** | **032** | Current Version: | 3.1.0 |
|---|---|---|---|---|

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

| For submission to: | **RAN # 7** | for approval | **X** | strategic | | *(for SMG* |
|---|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | *use only)* |

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

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

| **Source:** | Nokia | **Date:** | 04-Jan-2000 |
|---|---|---|---|

**Subject:**   Corrections to 25.215 compressed mode parameter list

**Work item:**

**Category:**
*(only one category shall be marked with an X)*

| | | | | **Release:** | |
|---|---|---|---|---|---|
| F | Correction | **X** | | Phase 2 | |
| A | Corresponds to a correction in an earlier release | | | Release 96 | |
| B | Addition of feature | | | Release 97 | |
| C | Functional modification of feature | | | Release 98 | |
| D | Editorial modification | | | Release 99 | **X** |
| | | | | Release 00 | |

**Reason for change:**   For FDD-FDD interfrequency measurements, the transmission gap distance (TGD) needs to be expressed in slots, not in frames. Some parameters were listed twice. Some parameters were not clarified to be integers.

**Clauses affected:**   6.1.1.2, 6.1.1.3

**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:**

<--------- double-click here for help and instructions on how to create a CR.

# Draft

## 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 $6.04 \times 10^{11}$ μS. |

# 6        Measurements for UTRA FDD

## 6.1      UE measurements

### 6.1.1    Compressed mode

#### 6.1.1.1      Use of compressed mode/dual receiver for monitoring

A UE shall, on upper layers commands, monitor cells on other frequencies (FDD, TDD, GSM).  To allow the UE to perform measurements, upper layers shall command that the UE enters in compressed mode, depending on the UE capabilities.

In case of compressed mode decision, UTRAN shall communicate to the UE the parameters of the compressed mode, described in reference [2], 25.212.

A UE with a single receiver shall support downlink compressed mode.

Every UE shall support uplink compressed mode, when monitoring frequencies which are close to the uplink transmission frequency (i.e. frequencies in the TDD or GSM 1800/1900 bands).

All fixed-duplex UE shall support both downlink and uplink compressed mode to allow inter-frequency handover within FDD and inter-mode handover from FDD to TDD.

*< WG1's note : the use of uplink compressed mode for single receiver UE when monitoring frequencies outside TDD and GSM 1800/1900 bands is for further study >*

UE with dual receivers can perform independent measurements, with the use of a "monitoring branch" receiver, that can operate independently from the UTRA FDD receiver branch. Such UE do not need to support downlink compressed mode.

The UE shall support one single measurement purpose within one compressed mode transmission gap. The measurement purpose of the gap is signalled by upper layers.

The following section provides rules to parametrise the compressed mode.

#### 6.1.1.2      Parameterisation of the compressed mode

In response to a request from upper layers, the UTRAN shall signal to the UE the compressed mode parameters.

The following parameters characterize a transmission gap :
- TGL : Transmission Gap Length is the duration of no transmission, expressed in number of slots.
- SFN : The system frame number when the transmission gap starts
- SN : The slot number when the transmission gap starts

With this definition, it is possible to have a flexible position of the transmission gap in the frame, as defined in [2].

In addition to the parameters defining the compressed mode gap, The following parameters characterize a compressed mode pattern is characterized by:

- TGP : Transmission Gap Period is the period of repetition of a set of consecutive frames containing up to 2 transmission gaps (*).
- TGL : As defined above
- TGD : Transmission Gap Distance is the duration of transmission between two consecutive transmission gaps within a transmission gap period, expressed in number of slotsframes. In case there is only one transmission gap in the transmission gap period, this parameter shall be set to zero.
- PD: Pattern duration is the total time of all TGPs expressed in number of frames.
- SFN : The system frame number when the first transmission gap starts

- UL/DL compressed mode selection: This parameter specifies whether compressed mode is used in UL only, DL only or both UL and DL.

- Compressed mode method: The method for generating the downlink compressed mode gap can be puncturing, reducing the spreading factor or upper layer scheduling and is described in [2].

- Transmit gap position mode: The gap position can be fixed or adjustable. This is defined in [2].

- Downlink frame type: This parameter defines if frame structure type 'A' or 'B' shall be used in downlink compressed mode. This is defined in [2].

- Scrambling code change: This parameter indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'. Alternative scrambling codes are described in [3].

- PCM: Power Control Mode specifies the uplink power control algorithm applied during recovery period after each transmission gap in compressed mode. PCM can take 2 values (0 or 1). The different power control modes are described in [4].

- PRM: Power Resume Mode selects the uplink power control method to calculate the initial transmit power after the gap. PRM can take two values (0 or 1) and is described in [4].

In a compressed mode pattern, the first transmission gap starts in the first frame of the pattern. The gaps have a fixed position in the frames, and start in the slot position defined in [2].

(*) : Optionally, the set of parameters may contain 2 values TGP1 and TGP2, where TGP1 is used for the 1st and the consecutive odd gap periods and TGP2 is used for the even ones. Note if TGP1=TGP2 this is equivalent to using only one TGP value.

In all cases, upper layers haves control of individual UE parameters. The repetition of any pattern can be stopped on upper layers' command.

The UE shall support [8] simultaneous compressed mode patterns which can be used for different measurements. Upper layers will ensure that the compressed mode gaps do not overlap and are not scheduled within the same frame. Patterns causing an overlap or too long gaps will not be processed by the UE and interpreted as a faulty message.

The parameters SFN, SN, TGL, TGD, TGP (or TGP1, TGP2) and PD shall all be integers.
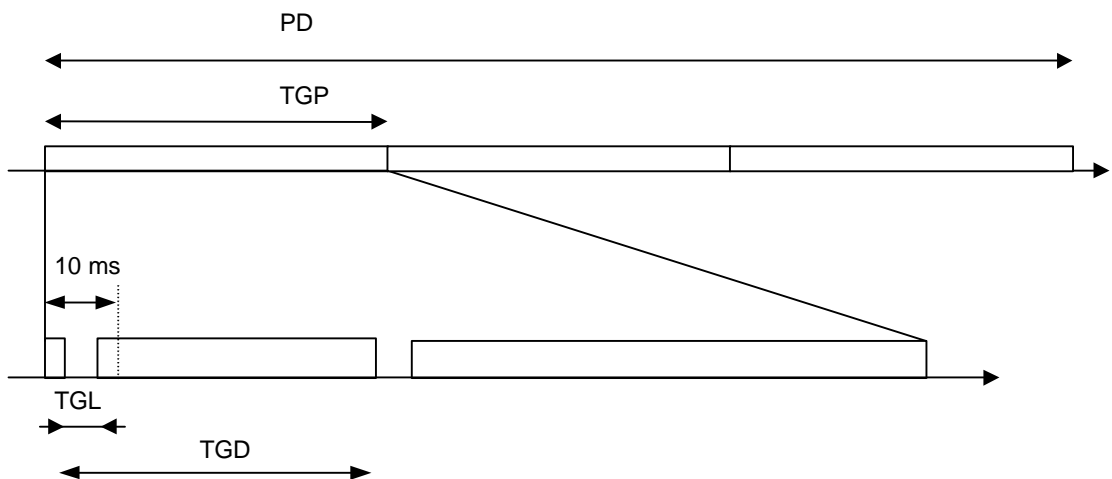
*Figure 1 : illustration of compressed mode pattern parameters*

## 6.1.1.3    Parameterisation limitations

In the table below the supported values for the TGL parameter ~~is~~ are shown.

| Measurements performed on | Supported TGL values |
|---|---|
| FDD inter-frequency cell | 7, 14 |
| TDD cell | 4 |
| GSM cell | 3, 4, 7, 10, 14 |

Multi-mode terminals shall support the union of  TGL values for the supported modes.

Further limitations on transmission gap position ~~is~~are given in TS 25.212.

~~Compressed mode patterns for handover monitoring are recommended in "Annex A: Measurements for Handover (Informative)".~~