# 3GPP TSG RAN Meeting #18 RP-020841
# New Orleans, Louisiana, USA, 3 - 6 December, 2002

**Title:** CRs (Rel-4 and Rel-5 Category A) to TS 25.214

**Source:** TSG-RAN WG1

**Agenda item:** 7.1.4

**Release 4 CRs + Associated Release 5 CRs**

**CRs with no links to other specifications**

***TS 25.214*** **(RP-020841)**

| No. | Spec | CR | Rev | R1 T-doc | Subject | Phase | Cat | Workitem | V_old | V_new |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25.214 | 306 | 1 | R1-02-1385 | Clarification of closed loop timing adjustment mode | REL-4 | F | | 4.5.0 | 4.6.0 |
| 2 | 25.214 | 307 | - | R1-02-1385 | Clarification of closed loop timing adjustment mode | REL-5 | A | | 5.2.0 | 5.3.0 |

•The Rel-4 CR was proposed for clarification of the TX diversity (closed loop) timing adjustment in SHO. There was one view expressed that this is not a clarification only and thus should go to Rel'5 instead (as an improvement) There are WG2 CRs related to this as this is more RRC issue. Technically correct WG1 CRs should be made available to RAN plenary (and issue decided with WG2)

**3GPP TSG-RAN WG1 Meeting #29**
**Shanghai, China, 05-08th November 2002**

**Tdoc R1-02-1385**

CR-Form-v5

# CHANGE REQUEST

⌘ **25.214** **CR** **306** ⌘ **rev** **1** ⌘ Current version: **4.5.0** ⌘

*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:*** | ⌘ | Clarification of closed loop timing adjustment mode |
| ***Source:*** | ⌘ | TSG RAN WG1 |
| ***Work item code:*** | ⌘ | ***Date:*** ⌘ 2002-11-08 |
| ***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:*** | ⌘ | It is unclear whether UE has to support different timing adjustment mode for each RL in the same active set. |
| ***Summary of change:*** | ⌘ | It clarifies that UE has to support different timing adjustment mode in the same active set. |
| ***Consequences if not approved:*** | ⌘ | Connection will become unstable if UTRAN sets such a configuration. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 7.1 |
| ***Other specs Affected:*** | ⌘ | ☐ Other core specifications ⌘<br>☐ Test specifications<br>☐ O&M Specifications |
| ***Other comments:*** | ⌘ | **Isolated impact analysis:**<br>UEs implemented based on version 4.5.0 and earlier will reject the configuration or cause unstable connnection when operating with different timing adjustment in diffrerent radio links in CL Tx diversity. Consequently this CR has an isolated impact. |

**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/ 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.

# 7.1 Determination of feedback information

The UE uses the CPICH to separately estimate the channels seen from each antenna.

Once every slot, the UE computes the phase adjustment, $\phi$, and for mode 2 the amplitude adjustment that should be applied at the UTRAN access point to maximise the UE received power. During soft handover, the UE computes the phase adjustment and for mode 2 the amplitude adjustment to maximise the total UE received power from the cells in the active set. In the case that a PDSCH, HS-PDSCH, or HS-SCCH is associated with a DPCH for which closed-loop transmit diversity is applied, the antenna weights applied to the PDSCH, HS-PDSCH, and HS-SCCH, respectively, are the same as the antenna weights applied to the associated DPCH. In case a PDSCH, HS-PDSCH, or HS-SCCH is associated with a DPCH during soft handover, the UE may emphasize the radio link carrying PDSCH, HS-PDSCH, or HS-SCCH, respectively, when calculating the antenna weights. An example of how the computations can be accomplished is given in Annex A.2.

The UE feeds back to the UTRAN access point the information on which phase/power settings to use. Feedback Signalling Message (FSM) bits are transmitted in the portion of FBI field of uplink DPCCH slot(s) assigned to closed loop mode transmit diversity, the FBI D field (see [1]). Each message is of length $N_W = N_{po}+N_{ph}$ bits and its format is shown in the figure 4. The transmission order of bits is from MSB to LSB, i.e. MSB is transmitted first. $FSM_{po}$ and $FSM_{ph}$ subfields are used to transmit the power and phase settings, respectively.

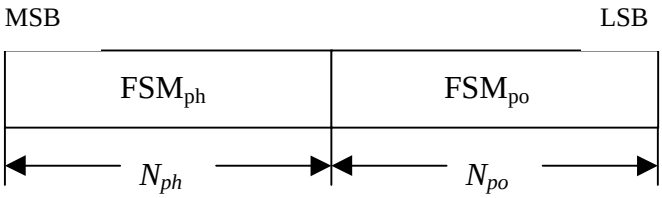


**Figure 4: Format of feedback signalling message. $FSM_{po}$ transmits the power setting and $FSM_{ph}$ the phase setting**

The adjustments are made by the UTRAN Access Point at the beginning of the downlink DPCCH pilot field. The downlink slot in which the adjustment is done is signalled to L1 of UE by higher layers. Two possibilities exist:

1) When feedback command is transmitted in uplink slot *i*, which is transmitted approximately 1024 chips in offset from the received downlink slot *j*, the adjustment is done at the beginning of the pilot field of the downlink slot (*j*+1) mod 15.

2) When feedback command is transmitted in uplink slot *i*, which is transmitted approximately 1024 chips in offset from the received downlink slot *j*, the adjustment is done at the beginning of the pilot field of the downlink slot (*j*+2) mod 15.

Thus, adjustment timing at UTRAN Access Point is either according to 1) or 2) as controlled by the higher layers.

In case of soft handover, Layer 1 shall support different adjustment timing values for different radio links in the same active set.

In case a PDSCH is associated with a DPCH for which closed-loop transmit diversity is applied, the antenna weights•applied to the PDSCH are the same as the antenna weights applied to the associated DPCH. The timing of the weight adjustment of the PDSCH is such that the PDSCH weight adjustment is done at the PDSCH slot border, N chips after the adjustment of the associated DPCH, where $0 \leq N < 2560$.

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**Tdoc R1-02-1385**

CR-Form-v5

# CHANGE REQUEST

⌘ **25.214** **CR** **307** ⌘ **rev** **-** ⌘ Current version: **5.2.0** ⌘

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| ***Work item code:*** | ⌘ | ***Date:*** ⌘ 2002-11-08 |
| ***Category:*** | ⌘ | **A** ***Release:*** ⌘ REL-5 |

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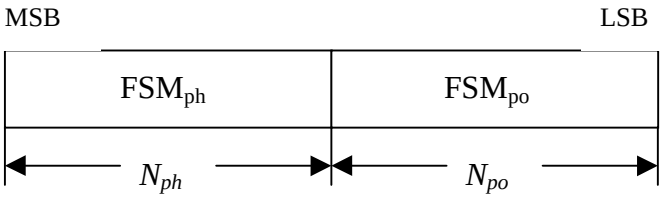


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2) When feedback command is transmitted in uplink slot *i*, which is transmitted approximately 1024 chips in offset from the received downlink slot *j*, the adjustment is done at the beginning of the pilot field of the downlink slot (*j*+2) mod 15.

Thus, adjustment timing at UTRAN Access Point is either according to 1) or 2) as controlled by the higher layers.

In case of soft handover, Layer 1 shall support different adjustment timing values for different radio links in the same active set.

The timing of the weight adjustment of the PDSCH is such that the PDSCH weight adjustment is done at the PDSCH slot border, N chips after the adjustment of the associated DPCH, where $0 \leq N < 2560$.

The timing of the weight adjustment of the HS-PDSCH and the HS-SCCH is such that the HS-PDSCH and HS-SCCH weight adjustment is done at the HS-PDSCH and HS-SCCH slot border, respectively, M chips after the adjustment of the associated DPCH, where $0 \leq M < 2560$.