

Agenda item:

Source: NTT DoCoMo

Title: Clarification on DL synchronisation primitives and TrCH BLER measurement in case of blind transport format detection

Document for: Decision

Introduction

The current description of “Downlink synchronisation primitives” in TS25.214 and “Transport channel BLER” in TS25.215 have some ambiguities in case of blind transport format detection i.e. no TFCI used. If there is a transport channel, which includes a transport format with zero transport blocks, this transport channel should be excluded from the criterion of the downlink synchronisation primitives and from measurement of transport channel BLER because no CRC is attached on the zero transport blocks.

Proposed Change Requests

This document then propose the following two change requests:

- Change request on downlink synchronisation primitives in TS25.214
- Change request on transport channel BLER in TS25.215

CHANGE REQUEST

✂ **TS 25.214 CR 163** ✂ rev **-** ✂ Current version: **3.5.0** ✂

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Proposed change affects: ✂ (U)SIM ME/UE Radio Access Network Core Network

Title:	✂ Correction on downlink synchronisation primitives ✂		
Source:	✂ NTT DoCoMo ✂		
Work item code:	✂	Date:	✂ 2001-03-01 ✂
Category:	✂ F ✂	Release:	✂ R99 ✂
	Use <u>one</u> 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)		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)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		

Reason for change:	✂ The current description of downlink synchronisation primitives has ambiguity in case of blind transport format detection i.e. no TFCI used. If there is a transport channel, which includes a transport format with zero transport blocks, this transport channel should be excluded from the criterion of the downlink synchronisation primitives because no CRC is attached on the zero transport blocks. ✂
Summary of change:	✂ It is clarified that the downlink synchronisation primitives in case of blind transport format detection i.e. no TFCI used. A transport channel, which includes a transport format with zero transport blocks, will be excluded from the criterion of the downlink synchronisation primitives. ✂
Consequences if not approved:	✂ Incorrect downlink synchronisation primitives will be indicated to higher layer in case of blind transport format detection i.e. no TFCI used. ✂

Clauses affected:	✂ 4.3.1.2 ✂		
Other specs affected:	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	✂	✂
Other comments:	✂		

4.3 DPCCH/DPDCH synchronisation

4.3.1 Synchronisation primitives

4.3.1.1 General

For the dedicated channels, synchronisation primitives are used to indicate the synchronisation status of radio links, both in uplink and downlink. The definition of the primitives is given in the following subclauses.

4.3.1.2 Downlink synchronisation primitives

Layer 1 in the UE shall every radio frame check synchronisation status of the downlink dedicated channels. Synchronisation status is indicated to higher layers using the CPHY-Sync-IND and CPHY-Out-of-Sync-IND primitives. The criteria for reporting synchronisation status are defined in two different phases.

The first phase lasts until 160 ms after the downlink dedicated channel is considered established by higher layers (physical channel establishment is defined in [5]). During this time out-of-sync shall not be reported and in-sync shall be reported using the CPHY-Sync-IND primitive if the following criterion is fulfilled:

The UE estimates the DPCCH quality over the previous 40 ms period to be better than a threshold Q_{in} . This criterion shall be assumed not to be fulfilled before 40 ms of DPCCH quality measurements have been collected. Q_{in} is defined implicitly by the relevant tests in [7].

The second phase starts 160 ms after the downlink dedicated channel is considered established by higher layers. During this phase both out-of-sync and in-sync are reported as follows.

Out-of-sync shall be reported using the CPHY-Out-of-Sync-IND primitive if either of the following criteria are fulfilled:

- The UE estimates the DPCCH quality over the previous 160 ms period to be worse than a threshold Q_{out} . Q_{out} is defined implicitly by the relevant tests in [7].
- The 20 most recently received transport blocks with a CRC attached, as observed on all TrCHs using CRC, have been received with incorrect CRC. In addition, over the previous 160 ms, all transport blocks with a CRC attached have been received with incorrect CRC. In case of no TFCI is used this criterion shall be considered only for TrCHs using CRC in all transport formats.

In-sync shall be reported using the CPHY-Sync-IND primitive if both of the following criteria are fulfilled:

- The UE estimates the DPCCH quality over the previous 160 ms period to be better than a threshold Q_{in} . Q_{in} is defined implicitly by the relevant tests in [7].
- At least one transport block with a CRC attached, as observed on all TrCHs using CRC, is received in a TTI ending in the current frame with correct CRC. If no transport blocks are received, or no transport block has a CRC attached, this criterion shall be assumed to be fulfilled. In case of no TFCI is used this criterion shall be considered only for TrCHs using CRC in all transport formats.

How the primitives are used by higher layers is described in [5]. The above definitions may lead to radio frames where neither the in-sync nor the out-of-sync primitives are reported.

CHANGE REQUEST

✍ **TS 25.215 CR 086** ✍ rev **-** ✍ Current version: **3.5.0** ✍

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Proposed change affects: ✍ (U)SIM ME/UE Radio Access Network Core Network

Title:	✍ Correction on transport channel BLER		
Source:	✍ NTT DoCoMo		
Work item code:	✍	Date:	✍ 2001-03-01
Category:	✍ F	Release:	✍ R99
Use <u>one</u> 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 <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:	✍ The current description of transport channel BLER has an ambiguity in case of blind transport format detection i.e. no TFCI used. If there is a transport channel, which includes a transport format with zero transport blocks, this transport channel should be excluded from the measurement of transport channel BLER because no CRC is attached on the zero transport blocks.
Summary of change:	✍ It is clarified that the transport channel BLER in case of blind transport format detection i.e. no TFCI used. A transport channel, which includes a transport format with zero transport blocks, will be excluded from the measurement of transport channel BLER.
Consequences if not approved:	✍ Incorrect transport channel BLER will be measured in case of blind transport format detection i.e. no TFCI used.

Clauses affected:	✍ 5.1.7		
Other specs Affected:	✍ <input type="checkbox"/>	Other core specifications	✍
	<input type="checkbox"/>	Test specifications	
	<input type="checkbox"/>	O&M Specifications	
Other comments:	✍		

5.1.3 SIR

Definition	Signal to Interference Ratio, defined as: $(RSCP/ISCP)/(SF/2)$. The SIR shall be measured on DPCCH after RL combination. The reference point for the SIR shall be the antenna connector of the UE. where: RSCP = Received Signal Code Power, the received power on one code measured on the pilot bits. ISCP = Interference Signal Code Power, the interference on the received signal measured on the pilot bits. Only the non-orthogonal part of the interference is included in the measurement. SF=The spreading factor used.
Applicable for	Connected Intra

5.1.4 UTRA carrier RSSI

Definition	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Measurement shall be performed on a UTRAN downlink carrier. The reference point for the RSSI shall be the antenna connector of the UE.
Applicable for	Idle, Connected Intra, Connected Inter

5.1.5 GSM carrier RSSI

Definition	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Measurement shall be performed on a GSM BCCH carrier. The reference point for the RSSI shall be the antenna connector of the UE.
Applicable for	Idle, Connected Inter

5.1.6 CPICH Ec/No

Definition	The received energy per chip divided by the power density in the band. The Ec/No is identical to RSCP/RSSI. Measurement shall be performed on the Primary CPICH. The reference point for the CPICH Ec/No shall be the antenna connector of the UE. If Tx diversity is applied on the Primary CPICH the received energy per chip (Ec) from each antenna shall be separately measured and summed together in [Ws] to a total received chip energy per chip on the Primary CPICH, before calculating the Ec/No.
Applicable for	Idle, Connected Intra, Connected Inter

5.1.7 Transport channel BLER

Definition	Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based on evaluating the CRC on each transport block after RL combination. BLER estimation is only required for transport channels using containing CRC. <u>In case of no TFCl is used all transport formats of a transport channel shall use CRC to enable BLER estimation for this transport channel.</u> In connected mode the BLER shall be possible to measure on any transport channel. If requested in idle mode it shall be possible to measure the BLER on transport channel PCH.
Applicable for	Idle, Connected Intra