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**Agenda Item:** AH21  
**Source:** CWTS/CATT  
**To:** TSG RAN WG1  
**Title:** Dedicated channel synchronisation  
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## 1. Summary

The description of the DPCH synchronisation is the same as that of 3.84Mcps TDD. The parameters for the criteria of Out-of-sync and In-sync is still with the square bracket and need further study.

## 2. Proposal

We propose to include the following paragraphs in the working CR for the TS25.224 as the description of dedicated channel synchronisation 1.28Mcps TDD.

## 5.3.2 DCH synchronization

### 5.3.2.1 Synchronization primitives

#### 5.3.2.1.1 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.

#### 5.3.2.1.2 Downlink synchronization 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 or CPHY-Out-of-Sync-IND primitives.

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

- the UE estimates the received dedicated channel burst quality over the last [160] ms period to be worse than a threshold  $Q_{out}$ . This criterion is never fulfilled during the first [160] ms of the dedicated channel's existence.  $Q_{out}$  is defined implicitly by the relevant tests in TS 25.945;
- if the UE detect the beacon channel reception level [10dB] above the handover triggering level, the UE uses [320] ms estimation period for the burst quality evaluation;
- the last [16] transport blocks, as observed on all TrCHs using CRC, are received with incorrect CRC and in addition, over the last [160] ms, no transport block has been received with correct CRC. In case the beacon channel reception criteria is fulfilled the values are [32] transport blocks and [320] ms respectively.

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

- the UE estimates the burst reception quality over the last [160] ms period to be better than a threshold  $Q_{in}$ . This criterion is always fulfilled during the first [160] ms of the dedicated channel's existence.  $Q_{in}$  is defined implicitly by the relevant tests in TS 25.945;
- at least one transport block, as observed on all TrCHs using CRC, is received with correct CRC. If there is no TrCH using CRC, this criterion is always fulfilled.

In-sync shall be reported using the CPHY-Sync-IND primitive in case of DTX if the following criterion is fulfilled:

- The UE receives a special burst in case of DTX and estimates its burst reception quality to be better than a threshold  $Q_{in}$ .

How the primitives are used by higher layers is described in TS 25.331.

### 5.3.2.1.3 Uplink synchronization primitives

Layer 1 in the Node B shall every radio frame check synchronisation status of the radio link. Synchronisation status is indicated to the RL Failure/Restored triggering function using either the CPHY-Sync-IND or CPHY-Out-of-Sync-IND primitive.

The exact criteria for indicating in-sync/out-of-sync is not subject to specification, but could e.g. be based on received burst quality or CRC checks. One example would be to have the same criteria as for the downlink synchronisation status primitives.

### 5.3.2.2 Radio link monitoring

#### 5.3.2.2.1 Downlink radio link failure

The downlink radio links are monitored by the UE, to trigger radio link failure procedures. The downlink radio link failure criteria is specified in TS 25.331, and is based on the synchronisation status primitives CPHY-Sync-IND and CPHY-Out-of-Sync-IND, indicating in-sync and out-of-sync respectively.

#### 5.3.2.2.2 Uplink radio link failure/restore

The uplink radio links are monitored by the Node B, to trigger radio link failure/restore procedures. Once the radio links have been established, they will be in the in-sync or out-of-sync states as shown in figure 1 in subclause 4.3.2.1 of TS25.211. Transitions between those two states are described below.

The uplink radio link failure/restore criteria is based on the synchronisation status primitives CPHY-Sync-IND and CPHY-Out-of-Sync-IND, indicating in-sync and out-of-sync respectively.

When the radio links are in the in-sync state, Node B shall start timer T RLFAILURE after receiving N OUTSYNC IND consecutive out-of-sync indications. Node B shall stop and reset timer T RLFAILURE upon receiving successive N INSYNC IND in-sync indications. If T RLFAILURE expires, Node B shall trigger the RL Failure procedure and indicate which radio links are out-of-sync. When the RL Failure procedure is triggered, the radio links' state changes to the out-of-sync state.

When the radio links are in the out-of-sync state, after receiving N INSYNC IND successive in-sync indications Node B shall trigger the RL Restore procedure and indicate which radio links have re-established synchronisation. When the RL Restore procedure is triggered, the radio links' state changes to the in-sync state.

The specific parameter settings (values of T RLFAILURE, N OUTSYNC IND, and N INSYNC IND) are configurable, see TS 25.433.

----- Changes to working CR of 25.224 end -----