TSG RAN Meeting #24   **RP-040257**
SEOUL, Korea, June 2nd-4th, 2004

Title   CRs (Rel-5 and Rel-6 Category A) to TS 25.214 on Clarification of UE
                             procedure in case of HHO failure
Source   QUALCOMM Europe, Ericsson, Nortel, Panasonic, Vodafone, Nokia
Agenda Item   7.2.5

RAN1 Tdoc	Spec	curr. Vers.	new Vers.	CR	Rev	Cat	Rel	Title	Work item
-	TS 25.214	5.8.0	5.9.0	349	3	F	Rel-5	Clarification of UE procedure in case of HHO failure	TEI-5
-	TS 25.214	6.1.0	6.2.0	350	3	A	Rel-6	Clarification of UE procedure in case of HHO failure	TEI-5

CR-Form-v7

CHANGE REQUEST

⌘	**25.214 CR 349**	⌘**rev 3** ⌘	Current version:	**5.8.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME **X** Radio Access Network ☐ Core Network ☐

Title: ⌘	Clarification of UE procedure in case of HHO failure	
Source: ⌘	QUALCOMM Europe, Ericsson, Nortel, Panasonic, Vodafone, Nokia	
Work item code:⌘	TEI-5	***Date:*** ⌘ 04/06/2004
Category: ⌘ **F**		***Release:*** ⌘ Rel-5

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)
Rel-6 (Release 6)

Reason for change: ⌘	Improve consistency of UE behaviour in order to faciliate network configuration and further reduce the risk of dropped calls in case of inter-RAT, intra- or inter-frequency hard handover.
Summary of change:⌘	Clarifies that UE shall follow the synchronisation procedure A when attempting to re-establish the DPCH after a inter-RAT, intra- or inter-frequency hard handover failure. Clarify that when resuming uplink DPCCH transmission the UE shall use the same active set, the same DPCCH power as before the handover attempt and thelatest Npcp value signalled by higher layer for the current DPCH.
Consequences if not approved: ⌘	Inconsistent UE behaviour resulting in more challenging network configuration and possibly more dropped calls resulting from handover attempts.

Clauses affected: ⌘	4.3.1

	Y	N		
Other specs ⌘	X		Other core specifications ⌘	25.331
affected:		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	**Isolated impact analysis:** This CR clarifes the UE behaviour in case of hard handover failure and does not affect the UE behaviour in any other scenario. It therefore has an isolated impact. Furthermore this CR is backward compatible with earlier versions of the specification.

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.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.

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 starts when higher layers initiate physical dedicated channel establishment (as described in [5]) or whenever the UE initiates synchronisation procedure A (as described in section 4.3.2.1) and 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 any of the following criteria is 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 non-zero length CRC attached, as observed on all TrCHs using non-zero length CRC, have been received with incorrect CRC. In addition, over the previous 160 ms, all transport blocks with a non-zero length CRC attached have been received with incorrect CRC. In case no TFCI is used this criterion shall not be considered for the TrCH(s) not using guided detection if they do not use a non-zero length CRC in all transport formats. If no transport blocks with a non-zero length CRC attached are received over the previous 160 ms this criterion shall not be assumed to be fulfilled.

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 non-zero length CRC attached, as observed on all TrCHs using non-zero length 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 non-zero length CRC attached in a TTI ending in the current frame and in addition over the previous 160 ms at least one transport block with a non-zero length CRC attached has been received with a correct CRC, this criterion shall be assumed to be fulfilled. If no transport blocks with a non-zero length CRC attached are received over the previous 160 ms this criterion shall also be assumed to be fulfilled. In case no TFCI is used this criterion shall not be considered for the TrCH(s) not using guided detection if they do not use a non-zero length 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.

4.3.1.3 Uplink synchronisation primitives

Layer 1 in the Node B shall every radio frame check synchronisation status of all radio link sets. Synchronisation status is indicated to the RL Failure/Restored triggering function using either the CPHY-Sync-IND or CPHY-Out-of-Sync-IND primitive. Hence, only one synchronisation status indication shall be given per radio link set.

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

4.3.2 Radio link establishment and physical layer reconfiguration for dedicated channels

4.3.2.1 General

Two synchronisation procedures are defined in order to obtain physical layer synchronisation of dedicated channels between UE and UTRAN:

- Synchronisation procedure A : This procedure shall be used when at least one downlink dedicated physical channel and one uplink dedicated physical channel are to be set up on a frequency and none of the radio links after the establishment/reconfiguration existed prior to the establishment/reconfiguration which also includes the following cases :

    - the UE was previously on another RAT i.e. inter-RAT handover

    - the UE was previously on another frequency i.e. inter-frequency hard handover

    - the UE has all its previous radio links removed and replaced by other radio links i.e. intra-frequency hard-handover

    - after it fails to complete an inter-RAT, intra- or inter-frequency hard-handover [8], the UE attempts to re-establish [5] all the dedicated physical channels which were already established immediately before the hard-handover attempt. In this case only steps c) and d) of synchronisation procedure A are applicable.

- Synchronisation procedure B : This procedure shall be used when one or several radio links are added to the active set and at least one of the radio links prior to the establishment/reconfiguration still exists after the establishment/reconfiguration.

For existing radio links, the reconfiguration of downlink phase reference from P-CPICH or S-CPICH to dedicated pilots is not supported. For all other physical layer reconfigurations not listed above, the UE and UTRAN shall not perform any of the synchronisation procedures listed above.

The two synchronisation procedures are described in subclauses 4.3.2.3 and 4.3.2.4 respectively.

4.3.2.2 Node B radio link set state machine

In Node B, each radio link set can be in three different states: initial state, out-of-sync state and in-sync state. Transitions between the different states is shown in figure 1 below. The state of the Node B at the start of radio link establishment is described in the following subclauses. Transitions between initial state and in-sync state are described in subclauses 4.3.2.3 and 4.3.2.4 and transitions between the in-sync and out-of-sync states are described in subclause 4.3.3.2.
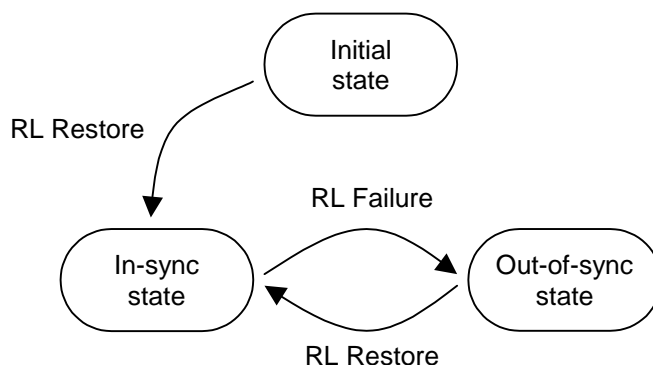
```
                                    ┌──────────┐
                                    │ Initial  │
                                    │  state   │
                                    └──────────┘
           RL Restore

                                    RL Failure

        ┌──────────┐                              ┌──────────┐
        │ In-sync  │ ──────────────────────────→ │Out-of-sync│
        │  state   │ ←────────────────────────── │   state   │
        └──────────┘                              └──────────┘
                              RL Restore
```

Figure 1: Node B radio link set states and transitions

4.3.2.3   Synchronisation procedure A

The synchronisation establishment procedure, which begins at the time indicated by higher layers (either immediately at receipt of upper layer signalling, or at an indicated activation time), is as follows:

a) Each Node B involved in the procedure sets all the radio link sets which are to be set-up for this UE in the initial state.

b) UTRAN shall start the transmission of the downlink DPCCH and may start the transmission of DPDCH if any data is to be transmitted. The initial downlink DPCCH transmit power is set by higher layers [6]. Downlink TPC commands are generated as described in 5.1.2.2.1.2.

c) The UE establishes downlink chip and frame synchronisation of DPCCH, using the P-CCPCH timing and timing offset information notified from UTRAN. Frame synchronisation can be confirmed using the frame synchronisation word. Downlink synchronisation status is reported to higher layers every radio frame according to subclause 4.3.1.2.

d) The UE shall not transmit on uplink until higher layers consider the downlink physical channel established. If no activation time for uplink DPCCH has been signalled to the UE or if the UE attempts to re-establish the DPCH after an inter-RAT, intra- or inter-frequency hard-handover failure [5], uplink DPCCH transmission shall start when higher layers consider the downlink physical channel established. If an activation time has been given, uplink DPCCH transmission shall not start before the downlink physical channel has been established and the activation time has been reached. Physical channel establishment and activation time are defined in [5]. The initial uplink DPCCH transmit power is set by higher layers [5]. In case the UE attempts to re-establish the DPCH after an inter-RAT, intra- or inter-frequency hard-handover failure [5] the initial uplink DPCCH power shall be the same as the one used immediately preceding the inter-RAT, intra- or inter-frequency hard-handover attempt. In case of physical layer reconfiguration the uplink DPCCH power is kept unchanged between before and after the reconfiguration except for inner loop power control adjustments. A power control preamble shall be applied as indicated by higher layers. The transmission of the uplink DPCCH power control preamble shall start N_{pcp} radio frames prior to the start of uplink DPDCH transmission, where N_{pcp} is a higher layer parameter set by UTRAN [5]; in case the UE attempts to re-establish the DPCH after an inter-RAT, intra- or inter-frequency hard-handover failure [5] the UE shall use the value of N_{pcp} as specified in [5] for this case. Note that the transmission start delay between DPCCH and DPDCH may be cancelled using a power control preamble of 0 length. The starting time for transmission of DPDCHs shall also satisfy the constraints on adding transport channels to a CCTrCH, as defined in [2] sub-clause 4.2.14, independently of whether there are any bits mapped to the DPDCHs. During the uplink DPCCH power control preamble, independently of the selected TFC, no transmission is done on the DPDCH.

e) UTRAN establishes uplink chip and frame synchronisation. Frame synchronisation can be confirmed using the frame synchronisation word. Radio link sets remain in the initial state until N_INSYNC_IND successive in-sync indications are received from layer 1, when Node B shall trigger the RL Restore procedure indicating which radio link set has obtained synchronisation. When RL Restore has been triggered the radio link set shall be considered to be in the in-sync state. The parameter value of N_INSYNC_IND is configurable, see [6]. The RL Restore procedure may be triggered several times, indicating when synchronisation is obtained for different radio link sets.

Note: The total signalling response delay for the establishment of a new DPCH shall not exceed the requirements given in [5] sub-clause 13.5.

4.3.2.4 Synchronisation procedure B

The synchronisation procedure B, which begins at the time indicated by higher layers (either immediately at receipt of upper layer signalling, or at an indicated activation time) is as follows:

a) The following applies to each Node B involved in the procedure:

- New radio link sets are set up to be in initial state.

- If one or several radio links are added to an existing radio link set, this radio link set shall be considered to be in the state the radio link set was prior to the addition of the radio link, i.e. if the radio link set was in the in-sync state before the addition of the radio link it shall remain in that state.

b) UTRAN starts the transmission of the downlink DPCCH/DPDCH for each new radio link at a frame timing such that the frame timing received at the UE will be within $T_0 \pm 148$ chips prior to the frame timing of the uplink DPCCH/DPDCH at the UE. Simultaneously, UTRAN establishes uplink chip and frame synchronisation of each new radio link. Frame synchronisation can be confirmed using the frame ~~synchronization~~synchronisation word. Radio link sets considered to be in the initial state shall remain in the initial state until N_INSYNC_IND successive in-sync indications are received from layer 1, when Node B shall trigger the RL Restore procedure indicating which radio link set has obtained synchronisation. When RL Restore is triggered the radio link set shall be considered to be in the in-sync state. The parameter value of N_INSYNC_IND is configurable, see [6]. The RL Restore procedure may be triggered several times, indicating when synchronisation is obtained for different radio link sets.

c) The UE establishes chip and frame synchronisation of each new radio link. Layer 1 in the UE keeps reporting downlink synchronisation status to higher layers every radio frame according to the second phase of sub-clause 4.3.1.2. Frame synchronisation can be confirmed using the frame ~~synchronization~~synchronisation word.

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CHANGE REQUEST

⌘	**25.214** CR **350**	⌘**rev**	**3**	⌘	Current version:	**6.1.0**	⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME **X** Radio Access Network ☐ Core Network ☐

Title: ⌘	Clarification of UE procedure in case of HHO failure	
Source: ⌘	QUALCOMM Europe, Ericsson, Nortel, Panasonic, Vodafone, Nokia	
Work item code: ⌘	TEI-5	***Date:*** ⌘ 04/06/2004

Category: ⌘ **A**

Use <u>one</u> 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.

Release: ⌘ Rel-6

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)
Rel-6 (Release 6)

Reason for change: ⌘	Improve consistency of UE behaviour in order to faciliate network configuration and further reduce the risk of dropped calls in case of inter-RAT, intra- or inter-frequency hard handover.
Summary of change: ⌘	Clarifies that UE shall follow the synchronisation procedure A when attempting to re-establish the DPCH after a inter-RAT, intra- or inter-frequency hard handover failure. Clarify that when resuming uplink DPCCH transmission the UE shall use the same active set, the same DPCCH power as before the handover attempt and thelatest Npcp value signalled by higher layer for the current DPCH.
Consequences if not approved: ⌘	Inconsistent UE behaviour resulting in more challenging network configuration and possibly more dropped calls resulting from handover attempts.

Clauses affected: ⌘	4.3.1

	Y	N		
Other specs affected: ⌘	X		Other core specifications ⌘	25.331
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	**Isolated impact analysis:** This CR clarifes the UE behaviour in case of hard handover failure and does not affect the UE behaviour in any other scenario. It therefore has an isolated impact. Furthermore this CR is backward compatible with earlier versions of the specification.

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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 starts when higher layers initiate physical dedicated channel establishment (as described in [5]) or whenever the UE initiates synchronisation procedure A (as described in section 4.3.2.1) and 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 any of the following criteria is 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 non-zero length CRC attached, as observed on all TrCHs using non-zero length CRC, have been received with incorrect CRC. In addition, over the previous 160 ms, all transport blocks with a non-zero length CRC attached have been received with incorrect CRC. In case no TFCI is used this criterion shall not be considered for the TrCH(s) not using guided detection if they do not use a non-zero length CRC in all transport formats. If no transport blocks with a non-zero length CRC attached are received over the previous 160 ms this criterion shall not be assumed to be fulfilled.

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 non-zero length CRC attached, as observed on all TrCHs using non-zero length 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 non-zero length CRC attached in a TTI ending in the current frame and in addition over the previous 160 ms at least one transport block with a non-zero length CRC attached has been received with a correct CRC, this criterion shall be assumed to be fulfilled. If no transport blocks with a non-zero length CRC attached are received over the previous 160 ms this criterion shall also be assumed to be fulfilled. In case no TFCI is used this criterion shall not be considered for the TrCH(s) not using guided detection if they do not use a non-zero length 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.

4.3.1.3 Uplink synchronisation primitives

Layer 1 in the Node B shall every radio frame check synchronisation status of all radio link sets. Synchronisation status is indicated to the RL Failure/Restored triggering function using either the CPHY-Sync-IND or CPHY-Out-of-Sync-IND primitive. Hence, only one synchronisation status indication shall be given per radio link set.

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

4.3.2 Radio link establishment and physical layer reconfiguration for dedicated channels

4.3.2.1 General

Two synchronisation procedures are defined in order to obtain physical layer synchronisation of dedicated channels between UE and UTRAN:

- Synchronisation procedure A : This procedure shall be used when at least one downlink dedicated physical channel and one uplink dedicated physical channel are to be set up on a frequency and none of the radio links after the establishment/reconfiguration existed prior to the establishment/reconfiguration which also includes the following cases :

  - the UE was previously on another RAT i.e. inter-RAT handover

  - the UE was previously on another frequency i.e. inter-frequency hard handover

  - the UE has all its previous radio links removed and replaced by other radio links i.e. intra-frequency hard-handover

  - after it fails to complete an inter-RAT, intra- or inter-frequency hard-handover [8], the UE attempts to re-establish [5] all the dedicated physical channels which were already established immediately before the hard-handover attempt. In this case only steps c) and d) of synchronisation procedure A are applicable.

- Synchronisation procedure B : This procedure shall be used when one or several radio links are added to the active set and at least one of the radio links prior to the establishment/reconfiguration still exists after the establishment/reconfiguration.

For existing radio links, the reconfiguration of downlink phase reference from P-CPICH or S-CPICH to dedicated pilots is not supported. For all other physical layer reconfigurations not listed above, the UE and UTRAN shall not perform any of the synchronisation procedures listed above.

The two synchronisation procedures are described in subclauses 4.3.2.3 and 4.3.2.4 respectively.

4.3.2.2 Node B radio link set state machine

In Node B, each radio link set can be in three different states: initial state, out-of-sync state and in-sync state. Transitions between the different states is shown in figure 1 below. The state of the Node B at the start of radio link establishment is described in the following subclauses. Transitions between initial state and in-sync state are described in subclauses 4.3.2.3 and 4.3.2.4 and transitions between the in-sync and out-of-sync states are described in subclause 4.3.3.2.
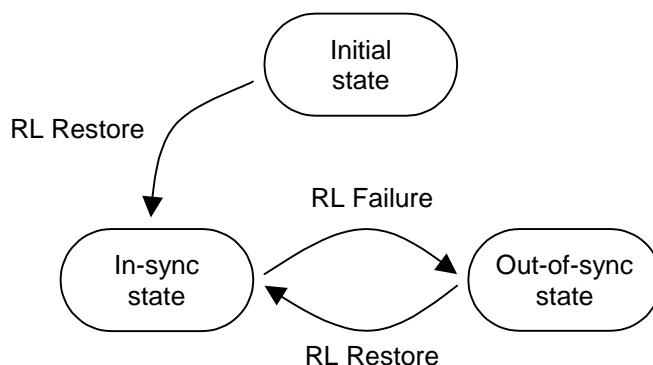
Figure 1: Node B radio link set states and transitions

4.3.2.3   Synchronisation procedure A

The synchronisation establishment procedure, which begins at the time indicated by higher layers (either immediately at receipt of upper layer signalling, or at an indicated activation time), is as follows:

a) Each Node B involved in the procedure sets all the radio link sets which are to be set-up for this UE in the initial state.

b) UTRAN shall start the transmission of the downlink DPCCH and may start the transmission of DPDCH if any data is to be transmitted. The initial downlink DPCCH transmit power is set by higher layers [6]. Downlink TPC commands are generated as described in 5.1.2.2.1.2.

c) The UE establishes downlink chip and frame synchronisation of DPCCH, using the P-CCPCH timing and timing offset information notified from UTRAN. Frame synchronisation can be confirmed using the frame synchronisation word. Downlink synchronisation status is reported to higher layers every radio frame according to subclause 4.3.1.2.

d) The UE shall not transmit on uplink until higher layers consider the downlink physical channel established. If no activation time for uplink DPCCH has been signalled to the UE or if the UE attempts to re-establish the DPCH after an inter-RAT, intra- or inter-frequency hard-handover failure [5], uplink DPCCH transmission shall start when higher layers consider the downlink physical channel established. If an activation time has been given, uplink DPCCH transmission shall not start before the downlink physical channel has been established and the activation time has been reached. Physical channel establishment and activation time are defined in [5]. The initial uplink DPCCH transmit power is set by higher layers [5]. In case the UE attempts to re-establish the DPCH after an inter-RAT, intra- or inter-frequency hard-handover failure [5] the initial uplink DPCCH power shall be the same as the one used immediately preceding the inter-RAT, intra- or inter-frequency hard-handover attempt. In case of physical layer reconfiguration the uplink DPCCH power is kept unchanged between before and after the reconfiguration except for inner loop power control adjustments. A power control preamble shall be applied as indicated by higher layers. The transmission of the uplink DPCCH power control preamble shall start N_{pcp} radio frames prior to the start of uplink DPDCH transmission, where N_{pcp} is a higher layer parameter set by UTRAN [5]; in case the UE attempts to re-establish the DPCH after an inter-RAT, intra- or inter-frequency hard-handover failure [5] the UE shall use the value of N_{pcp} as specified in [5] for this case. Note that the transmission start delay between DPCCH and DPDCH may be cancelled using a power control preamble of 0 length. The starting time for transmission of DPDCHs shall also satisfy the constraints on adding transport channels to a CCTrCH, as defined in [2] sub-clause 4.2.14, independently of whether there are any bits mapped to the DPDCHs. During the uplink DPCCH power control preamble, independently of the selected TFC, no transmission is done on the DPDCH.

e) UTRAN establishes uplink chip and frame synchronisation. Frame synchronisation can be confirmed using the frame synchronisation word. Radio link sets remain in the initial state until N_INSYNC_IND successive in-sync indications are received from layer 1, when Node B shall trigger the RL Restore procedure indicating which radio link set has obtained synchronisation. When RL Restore has been triggered the radio link set shall be considered to be in the in-sync state. The parameter value of N_INSYNC_IND is configurable, see [6]. The RL Restore procedure may be triggered several times, indicating when synchronisation is obtained for different radio link sets.

Note: The total signalling response delay for the establishment of a new DPCH shall not exceed the requirements given in [5] sub-clause 13.5.

4.3.2.4   Synchronisation procedure B

The synchronisation procedure B, which begins at the time indicated by higher layers (either immediately at receipt of upper layer signalling, or at an indicated activation time) is as follows:

a) The following applies to each Node B involved in the procedure:

-   New radio link sets are set up to be in initial state.

-   If one or several radio links are added to an existing radio link set, this radio link set shall be considered to be in the state the radio link set was prior to the addition of the radio link, i.e. if the radio link set was in the in-sync state before the addition of the radio link it shall remain in that state.

b) UTRAN starts the transmission of the downlink DPCCH/DPDCH for each new radio link at a frame timing such that the frame timing received at the UE will be within $T_0 \pm 148$ chips prior to the frame timing of the uplink DPCCH/DPDCH at the UE. Simultaneously, UTRAN establishes uplink chip and frame synchronisation of each new radio link. Frame synchronisation can be confirmed using the frame ~~synchronization~~synchronisation word. Radio link sets considered to be in the initial state shall remain in the initial state until N_INSYNC_IND successive in-sync indications are received from layer 1, when Node B shall trigger the RL Restore procedure indicating which radio link set has obtained synchronisation. When RL Restore is triggered the radio link set shall be considered to be in the in-sync state. The parameter value of N_INSYNC_IND is configurable, see [6]. The RL Restore procedure may be triggered several times, indicating when synchronisation is obtained for different radio link sets.

c) The UE establishes chip and frame synchronisation of each new radio link. Layer 1 in the UE keeps reporting downlink synchronisation status to higher layers every radio frame according to the second phase of sub-clause 4.3.1.2. Frame synchronisation can be confirmed using the frame ~~synchronization~~synchronisation word.