TSG RAN Meeting #27 **RP-050089**
Tokyo, Japan, 9 - 11 March 2005

Title **Linked CRs (Rel-6 Category B) to TS25.221 & TS25.224 & TS25.302 & TS25.331 for Release 6 HS-DSCH operation without a DL DPCH for 3.84Mcps**
Source **TSG RAN WG1 and WG2**
Agenda Item **9.2.1.2.1**

RAN-WG Tdoc	Spec	CR	Rev	Rel	Cat	Current Version	Subject	Work item	Remarks
R1-050227	25.221	118	-	Rel-6	B	6.2.0	Release 6 HS-DSCH operation without a DL DPCH for 3.84Mcps TDD	RANimp-RABSE-CodeOptTDD	
R1-050228	25.224	141	-	Rel-6	B	6.3.0	Release 6 HS-DSCH operation without a DL DPCH for 3.84Mcps TDD	RANimp-RABSE-CodeOptTDD	
R2-050289	25.302	148	-	Rel-6	B	6.2.0	Release 6 HS-DSCH operation without a DL DPCH for 3.84Mcps TDD	RANimp-RABSE-CodeOptTDD	
R2-050288	25.331	2504	-	Rel-6	B	6.4.0	Release 6 HS-DSCH operation without a DL DPCH for 3.84Mcps TDD	RANimp-RABSE-CodeOptTDD	

3GPP TSG-RAN WG2 #45bis
Sophia Antipolis, France
January 10 – 14, 2005

Tdoc ⌘R2-050289

CR-Form-v7.1

CHANGE REQUEST

⌘ **25.302** **CR** **148** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*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 ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Release 6 HS-DSCH operation without a DL DPCH for 3.84 Mcps TDD
Source:	⌘	RAN WG2
Work item code:	⌘	RANimp-RABSE-CodeOPTTDD
Date:	⌘	10/01/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

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:
Ph2 *(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)*
Rel-7 *(Release 7)*

Reason for change:	⌘	Downlink code resources are used inefficiently for HSDPA "data-only" users. This situation arises because it is mandatory for a DL DPCH to be configured when using HS-DSCH, even when DCCH and DTCH logical channels are mapped to HS-DSCH and no L1 information is carried by the DL DPCH. When the need for an associated DL-DPCH is removed the generation of "in-sync" and "out of sync" indications should be based upon new procedures associated with HS-DSCH reception as specified in 25.224.
Summary of change:	⌘	Table 5 is modified to permit operation of HS-DSCH without an associated DCH. The definition of CPHY-sync is modified to include new definitions provided in 25.224.
Consequences if not approved:	⌘	Inefficient usage of downlink code resources for "data-only" HSPDA users.

Clauses affected:	⌘	8.4.1, 10.2.1.1, 10.2.1.2

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications		25.221, 25.224, 25.331
				Test specifications		
				O&M Specifications		

Other comments:	⌘	

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:

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---------- First Change ----------

8.4 TDD Downlink

8.4.1 3.84 Mcps TDD Downlink

The table describes the possible combinations of 3.84 Mcps TDD physical channels that can be supported in the downlink by one UE simultaneously on the same frequency in any one 10ms frame, where a 3.84 Mcps TDD physical channel corresponds to one code, one timeslot and one frequency.

Depending on UE radio capabilities UEs may be required to decode occasionally P-CCPCH of its own cell in the following Physical Channel Combinations to maintain open loop power control and/or acquire parameters for RACH access: 4, 6, 7, 8, 9, 10, 11, 12, 13.

Depending on UE radio capabilities UEs may be required to decode occasionally one P-CCPCH of neighbour cells in the following Physical Channel Combinations for handover: 6, 8, 11, 12, 13.

Table 5: 3.84 Mcps TDD Downlink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	P-CCPCH + One S-CCPCH	BCH and PCH and/or one or more FACH	Mandatory	
2	P-CCPCH	BCH	Mandatory	
3	S-CCPCH	FACH or/and PCH	Mandatory	
4	More than one S-CCPCH	one or more FACH+ one or more PCH	Depending on UE capabilities	
5	PICH	N/A	Mandatory	
6	Three or more DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
7	One or two DPCH	One or more DCH coded into a single CCTrCH	Mandatory	This combination is used for reference measurement channel.
8	One or more S-CCPCH + one or more DPCH	PCH and/or one or more FACH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The number of DCHs and the maximum channel bit rate are dependent on the UE radio access capabilities. This combination is used for shared channel operation only.
9	One or more PDSCH	One or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination is used for shared channel operation.
10	One or more PDSCH + one or more S-CCPCH	PCH and/or one or more FACH + one or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination is used for shared channel operation.
11	One or more PDSCH + one or more DPCH	One or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination is used for shared channel operation.

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
12	One or more PDSCH + one or more S-CCPCH + one or more DPCH	PCH and/or one or more FACH + one or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination is used for shared channel operation.
13	Zero, o~~O~~ne or more DPCH + zero, one or more HS-PDSCH + one or more HS-SCCH	Zero, o~~O~~ne or more DCH coded into one or more CCTrCH + one or more HS-DSCH coded into one CCTrCH	Depending on UE radio access capabilities	
NOTE: Reference: [12].				

---------- Second Change ----------

10.2.1 STATUS PRIMITIVES

10.2.1.1 CPHY-Sync-IND

This primitive is used for L1 to indicate to RRC that synchronisation of a certain physical channel has been done in the receiver. In FDD synchronisation is based on reception of the DPCCH, and in TDD synchronisation is based on Special Burst, TB reception, and DPCH burst quality estimation. For 3.84Mcps TDD, when the UE is in cell_DCH state but no DL DPCH is configured the primitive is based on the methods specified in [5].

Parameters:

- CCTrCH ID (TDD only).

10.2.1.2 CPHY-Out-of-Sync-IND

Primitive sent from L1 to RRC indicating that synchronisation of a previously configured connection has been lost in the receiver. In FDD synchronisation is based on reception of the DPCCH, and in TDD synchronisation is based on Special Burst, TB reception, and DPCH burst quality estimation. For 3.84Mcps TDD, when the UE is in cell_DCH state but no DL DPCH is configured the primitive is based on the methods specified in [5].

Parameters:

- CCTrCH ID (TDD only).

10.2.1.3 CPHY-Measurement-REQ

The Request primitive is used for RRC to configure L1 measurements.

Parameters:

- transmission power threshold;
- refer to clause 9 for measurement parameters.

10.2.1.4 CPHY-Measurement-IND

The Indication primitive is used to report the measurement results.

Parameters:

- refer to clause 9 for measurement parameters.

10.2.1.5 CPHY-Error-IND

The CPHY-Error primitive is used to indicate to the management entity that an error has occurred as a result of a physical layer fault.

Parameters:

- error code.

10.2.1.6 CPHY-CPCH-EOT-IND

The CPHY-CPCH-EOT-IND primitive is used by L1 to indicate RRC of an end of CPCH transmission event has occurred. This primitive is used in FDD only.

Parameters:

- No Parameter.

---------- End of Changes ----------

3GPP TSG-RAN WG2 #45bis
Sophia Antipolis, France
January 10 – 15, 2005

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CHANGE REQUEST

⌘ **TS 25.331** **CR** **2504** ⌘ **rev** **-** ⌘ Current version: **6.4.0** ⌘

*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 ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	Release 6 HS-DSCH operation without a DL DPCH for 3.84 Mcps TDD
Source:	⌘	RAN WG2
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Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change:	⌘	Downlink code resources are used inefficiently for HSDPA "data-only" users. This situation arises because it is mandatory for a DL DPCH to be configured when using HS-DSCH, even when DCCH and DTCH logical channels are mapped to HS-DSCH and no L1 information is carried by the DL DPCH.
Summary of change:	⌘	Section 8.5.6 is ammended so that radio link failure procedures are applicable to the case where the HS-DSCH has no associated DL DPCH. Section 8.5.25: actions related to HS_DSCH_RECEPTION variable is amended so that for 3.84 Mcps TDD HS_DSCH_RECEPTION may be set to TRUE when a dedicated physical channel is allocated to the UE in the uplink. Annex B.3.1: characterisation of CELL_DCH state is extended for 3.84 Mcps TDD to include the case where a dedicated physical channel is allocated in the uplink and HS-DSCH_RECEPTION is set to TRUE.
Consequences if not approved:	⌘	Inefficient usage of downlink code resources for "data-only" HSPDA users.

Clauses affected:	⌘	8.5.6, 8.5.25, Annex B.3.1			
Other specs affected:	⌘	**Y** / **N** **Y** / ☐ Other core specifications ☐ / ☐ Test specifications ☐ / ☐ O&M Specifications	⌘	25.221, 25.224, 25.302	
Other comments:	⌘				

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---------- First Change ----------

8.2.2.7 Physical channel failure

If the received message caused the UE to be in CELL_DCH state and the UE according to subclause 8.5.4 failed to establish the dedicated physical channel(s) indicated in the received message or for 3.84 Mcps TDD failed to establish the physical channel(s) indicated in the received message to which DCCH(s) are mapped the UE shall:

1> if the CM_PATTERN_ACTIVATION_ABORTED flag is not set to TRUE:

2> revert to the configuration prior to the reception of the message (old configuration), including any HS-DSCH and E-DCH configuration if existing;

2> if the UE was in Cell DCH state prior to the reconfiguration:

3> perform the physical layer synchronisation procedure A as specified in [29] (FDD only);

3> after the establishment of the uplink physical channel, send DPCCH and no DPDCH according to [26] during the number of frames indicated in the IE "PC preamble" in the variable LATEST_CONFIGURED_SRB_DELAY_AND_PC_PREAMBLE; and

3> then not send any data on signalling radio bearers RB0 to RB4 during the number of frames indicated in the IE "SRB delay" in the variable LATEST_CONFIGURED_SRB_DELAY_AND_PC_PREAMBLE.

1> if the CM_PATTERN_ACTIVATION_ABORTED flag is set to TRUE or if the old configuration includes dedicated physical channels (CELL_DCH state) and the UE is unable to revert to the old configuration:

2> initiate a cell update procedure according to subclause 8.3.1, using the cause "radio link failure";

2> after the cell update procedure has completed successfully:

3> proceed as below.

1> if the old configuration does not include dedicated physical channels (CELL_FACH state):

2> select a suitable UTRA cell according to [4];

2> if the UE selects another cell than the cell the UE camped on upon reception of the reconfiguration message:

3> initiate a cell update procedure according to subclause 8.3.1, using the cause "Cell reselection";

3> after the cell update procedure has completed successfully:

4> proceed as below.

1> transmit a failure response message as specified in subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The procedure ends.

---------- 2nd Change ----------

8.3.1.7a Physical channel failure

If the received CELL UPDATE CONFIRM message would cause the UE to transit to CELL_DCH state:

1> if the UE failed to establish the physical channel(s) indicated in the received CELL UPDATE CONFIRM message according to the criteria defined in subclause 8.5.4 are not fulfilled; or

1> the received CELL UPDATE CONFIRM message does not contain dedicated physical channels;or~~:~~

1> for 3.84 Mcps TDD, the received CELL UPDATE CONFIRM does not contain physical channels to which DCCH(s) are mapped

the UE shall:

1> if, caused by the received CELL UPDATE CONFIRM message

2> the IE "Reconfiguration" in the variable CIPHERING_STATUS is set to TRUE; and/or

2> the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO is set to TRUE:

3> abort the ongoing integrity and/or ciphering reconfiguration;

3> if the received CELL UPDATE CONFIRM message contained the IE "Ciphering mode info":

4> set the IE "Reconfiguration" in the variable CIPHERING_STATUS to FALSE; and

4> clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO.

3> if the received CELL UPDATE CONFIRM message contained the IE "Integrity protection mode info":

4> set the IE "Reconfiguration" in the variable INTEGRITY_PROTECTION_INFO to FALSE; and

4> clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO.

1> if the variable ORDERED_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message:

2> set the IE "failure cause" to "physical channel failure";

2> set the variable ORDERED_RECONFIGURATION to FALSE.

1> if V302 is equal to or smaller than N302:

2> select a suitable UTRA cell according to [4];

2> set the contents of the CELL UPDATE message according to subclause 8.3.1.3, except for the IE "Cell update cause" which shall be set to "Radio link failure";

2> submit the CELL UPDATE message for transmission on the uplink CCCH;

2> increment counter V302;

2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.

1> if V302 is greater than N302:

2> clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO;

2> clear the variable INTEGRITY_PROTECTION_ACTIVATION_INFO;

2> in case of a cell update procedure:

3> clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS.

2> release all its radio resources;

2> indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers;

2> clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;

2> clear the variable ESTABLISHED_RABS;

2> set the variable CELL_UPDATE_STARTED to FALSE;

2> enter idle mode.

---------- 3rd Change ----------

8.5.6 Radio link failure criteria and actions upon radio link failure

In CELL_DCH State, after receiving N313 consecutive "out of sync" indications from layer 1 for the established DPCCH physical channel in FDD, and the physical channels ~~DPCH~~ associated with mapped DCCHs in TDD, the UE shall:

1> start timer T313;

1> upon receiving N315 successive "in sync" indications from layer 1 and upon change of UE state:

2> stop and reset timer T313.

1> if T313 expires:

2> consider it as a "Radio link failure".

Periods in time where neither "in sync" nor "out of sync" is reported by layer 1 do not affect the evaluation of the number of consecutive (resp. successive) "in sync" or "out of sync" indications.

When a radio link failure occurs, the UE shall:

1> clear the dedicated physical channel configuration;

1> perform actions as specified for the ongoing procedure;

1> if no procedure is ongoing or no actions are specified for the ongoing procedure:

2> perform a cell update procedure according to subclause 8.3.1 using the cause "radio link failure".

---------- 4th Change ----------

8.5.25 Actions related to HS_DSCH_RECEPTION variable

The variable HS_DSCH_RECEPTION shall be set to "TRUE" only when all the following conditions are met:

1> for FDD and 1.28 Mcps TDD:

- the UE is in CELL_DCH state;

1> for 3.84 Mcps TDD:

- a dedicated physical channel is allocated to the UE in the uplink;

1> the variable H_RNTI is set;

1> the UE has a stored IE "HS-SCCH info";

1> the UE has a stored IE "HARQ info";

1> for FDD:

2> one of the radio links in the active set is configured as the serving HS-DSCH radio link;

2> the UE has stored the following IEs:

- IE "Measurement Feedback Info";
- IE "Uplink DPCH Power Control Info" including stored $\Delta_{ACK,}$ Δ_{NACK} and Ack-NACK Repetition factor.

1> for 3.84 Mcps TDD, the UE has stored the following IE:

- IE "HS-PDSCH Timeslot Configuration".

1> for 1.28 Mcps TDD, the UE has stored the following IE:

- IE "HS-PDSCH Midamble Configuration".

1> there is at least one RB mapped to HS-DSCH;

1> at least for one of the RB's mapped to HS-DSCH, there is at least one MAC-hs queue (including the IE "MAC-d PDU size Info") configured for the concerning MAC-d flow;

NOTE: To enable or disable HS-DSCH reception, the UTRAN has the possibility to add/remove the concerning HS-DSCH related RB mapping options, add/remove the concerning MAC-d flows or, for FDD, add/remove the serving HS-DSCH radio link or, for TDD add/remove H-RNTI upon hard handover.

If any of the above conditions is not met and the variable HS_DSCH_RECEPTION is set to TRUE, the UE shall:

1> set the variable HS_DSCH_RECEPTION to FALSE;

1> stop any HS_SCCH reception procedures;

1> stop any HS-DSCH reception procedures;

1> clear the variable H_RNTI and remove any stored H-RNTI;

1> act as if the IE "MAC-hs reset indicator" is received and set to TRUE;

1> release all HARQ resources;

1> no long consider any radio link to be the HS-DSCH serving radio link.

1> For 3.84 Mcps TDD, if a downlink DPCH is not assigned the UE shall clear the uplink DPCH configuration and initiate the Cell Update procedure according to clause 8.3.1, cause "radio link failure"

NOTE: If configured for HS-DSCH and not explicitly indicated as being cleared, the UE will have still stored the IEs "HARQ info", "Added or Reconfigured MAC-d flow", "RB mapping Info" and "Downlink HS-PDSCH information".

Whenever the variable HS_DSCH_RECEPTION is set to TRUE, the UE shall:

1> perform HS_SCCH reception procedures according to the stored HS-SCCH configuration as stated in:

2> subclause 8.6.6.33 for the IE "HS-SCCH Info".

1> perform HS-DSCH reception procedures according to the stored HS-PDSCH configuration as stated in:

2> subclause 8.6.3.1b for the IE "H-RNTI";

2> subclause 8.6.5.6b for the IE "HARQ info";

2> subclause 8.6.6.34 for the IE "Measurement Feedback Info".

Whenever the variable HS_DSCH_RECEPTION is set to FALSE, the UE shall:

1> not perform HS_SCCH reception procedures;

1> not perform HS-DSCH reception procedures.

---------- 5th Change ----------

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B.3 UTRA RRC Connected Mode States and Transitions

B.3.1 CELL_DCH state

The CELL_DCH state is characterised by

- For 3.84 Mcps TDD: A dedicated physical channel is allocated to the UE in uplink and downlink or a dedicated physical channel is allocated to the UE in the uplink and HS_DSCH_RECEPTION is set to TRUE.

- A dedicated physical channel is allocated to the UE in uplink and downlink.

- The UE is known on cell level according to its current active set.

- Dedicated transport channels, downlink and uplink (TDD) shared transport channels, and a combination of these transport channels can be used by the UE.

The CELL_DCH-state is entered from the Idle Mode through the setup of an RRC connection, or by establishing a dedicated physical channel from the CELL_FACH state.

A PDSCH may be assigned to the UE in this state, to be used for a DSCH. In TDD a PUSCH may also be assigned to the UE in this state, to be used for a USCH. If PDSCH or PUSCH are used for TDD, a FACH transport channel may be assigned to the UE for reception of physical shared channel allocation messages.

---------- End of Changes ----------

3GPP TSG-RAN WG1 Meeting #40
Scottsdale, Arizona, USA, 14-18 February 2005

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CHANGE REQUEST

⌘ **TS 25.221 CR 118** ⌘ **rev -** ⌘ Current version: **6.2.0** ⌘

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

Title:	⌘	Release 6 HS-DSCH operation without a DL DPCH for 3.84Mcps TDD
Source:	⌘	RAN WG1
Work item code:	⌘	RANimp-RABSE-CodeOptTDD
Date:	⌘	25/02/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

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Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	Downlink code resources are used inefficiently for HSDPA "data-only" users. This situation arises because it is mandatory for a DL DPCH to be configured when using HS-DSCH, even when DCCH and DTCH logical channels are mapped to HS-DSCH and no L1 information is carried by the DL DPCH.
Summary of change:	⌘	Statements indicating an association between HS-DSCH and a DL DPCH are removed for 3.84Mcps TDD.
Consequences if not approved:	⌘	Inefficient usage of downlink code resources for "data-only" HSDPA users.

Clauses affected:	⌘	4.1.2.7, 6.2.7.1

Other specs affected: ⌘	Y	N		⌘
	X		Other core specifications	25.224, 25.331, 25.302
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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4.1.2.7 HS-DSCH – High Speed Downlink Shared Channel

The High Speed Downlink Shared Channel (HS-DSCH) is a downlink transport channel shared by several UEs. The HS-DSCH is associated with ~~one downlink DPCH, and~~ one or several Shared Control Channels (HS-SCCH). The HS-DSCH is transmitted over the entire cell or over only part of the cell using e.g. beam-forming antennas.

6.2.7.1 HS-DSCH/HS-SCCH Association and Timing

The HS-DSCH is always associated with ~~one DL DPCH and~~ a number of High Speed Shared Control Channels (HS-SCCH). The number of HS-SCCHs that are associated with an HS-DSCH for one UE can range from a minimum of one HS-SCCH (M=1) to a maximum of four HS-SCCH (M=4). All relevant Layer 1 control information is transmitted in the associated HS-SCCH i.e. the HS-PDSCH does not carry any Layer 1 control information.

The HS-DSCH related time slot information that is carried on the HS-SCCH refers to the next valid HS-PDSCH allocation, which is given by the following limitation: There shall be an offset of $n_{HS\text{-}SCCH} \geq 4$ time slots between the HS-SCCH carrying the HS-DSCH related information and the first indicated HS-PDSCH (in time) for a given UE. The HS-DSCH related time slot information shall not refer to two subsequent radio frames but shall always refer to either the same or the following radio frame, as illustrated in figure 21A. Note that the figure only shows the HS-SCCH that carries the HS-DSCH related information for the given UE.

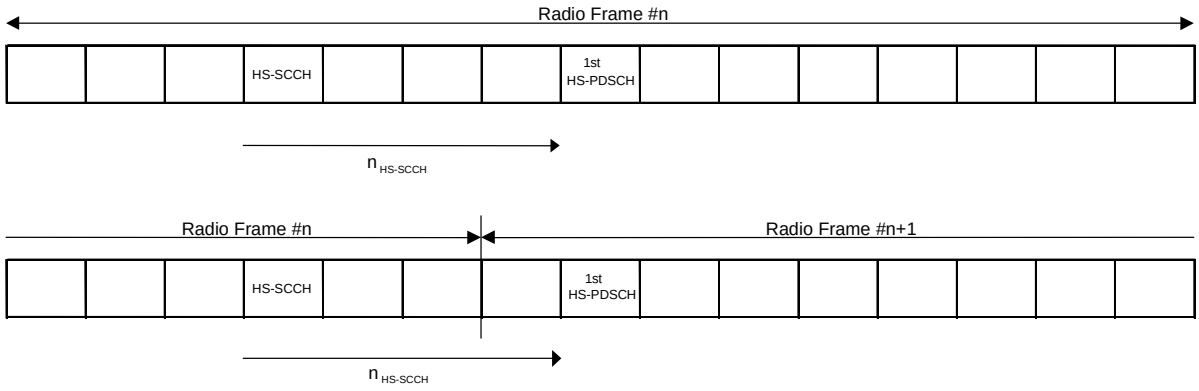

Figure 21A: Timing for HS-SCCH and HS-DSCH for different radio frame configurations for a given UE

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Tdoc ⌘ R1-050228

CR-Form-v7.1

CHANGE REQUEST

⌘ **TS 25.224 CR 141** ⌘ **rev -** ⌘ Current version: **6.3.0** ⌘

*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 ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	Release 6 HS-DSCH operation without a DL DPCH for 3.84Mcps TDD
Source:	⌘	RAN WG1
Work item code:	⌘	RANimp-RABSE-CodeOptTDD
Date:	⌘	09/02/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

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:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	Downlink code resources are used inefficiently for HSDPA “data-only” users. This situation arises because it is mandatory for a DL DPCH to be configured when using HS-DSCH, even when DCCH and DTCH logical channels are mapped to HS-DSCH and no L1 information is carried by the DL DPCH.
Summary of change:	⌘	Downlink synchronisation primitives are generated using other downlink physical channels when the UE is configured with an UL DPCH but no DL DPCH.
Consequences if not approved:	⌘	Inefficient usage of downlink code resources for “data-only” HSDPA users.

Clauses affected:	⌘	4.4.2.1.1, 4.4.2.1.2, 4.4.2.1.2a, 5.3.2

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications		25.221, 25.331, 25.302
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

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.

4.4.2 Dedicated channel synchronisation

4.4.2.1 Synchronisation primitives

4.4.2.1.1 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.

When operating HS-DSCH, the configuration of a downlink DPCH by UTRAN is optional (this applies to 3.84Mcps TDD only). Subclause 4.4.2.1.2 relates to downlink synchronisation in the case that an uplink and downlink DPCH have been configured by higher layers. Subclause 4.4.2.1.2a relates to downlink synchronisation for 3.84Mcps TDD in the case that only an uplink DPCH has been configured by higher layers.

4.4.2.1.2 Downlink synchronisation primitives

Layer 1 in the UE shall check the synchronization status of each DL CCTrCH individually in every radio frame All bursts and transport channels of a CCTrCH shall be taken into account. Synchronisation status is indicated to higher layers, using the CPHY-Sync-IND or CPHY-Out-of-Sync-IND primitives. For dedicated physical channels configured with Repetition Periods [15] only the configured active periods shall be taken into account in the estimation. The status check shall also include detection of the Special Bursts defined in 4.5 for DTX.

The criteria for reporting synchronization status are defined in two different phases.

The first phase lasts until 160 ms after the downlink CCTrCH is considered to be established by higher layers. During this time, Out-of-sync shall not be reported. In-sync shall be reported using the CPHY-Sync-IND primitive if any one of the following three criteria is fulfilled.

a) The UE estimates the burst reception 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 burst reception quality measurement have been collected.

b) At least one transport block with a CRC attached is received in a TTI ending in the current frame with correct CRC.

c) The UE detects at least one Special Burst. Special Burst detection shall be successful if the burst is detected with quality above a threshold, Q_{sbin}, and the TFCI is decoded to be that of the Special Burst.

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 all three 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}. The value, Q_{out} is defined implicitly by the relevant tests in [2];

- no Special Burst is detected with quality above a threshold Q_{sbout} within the last 160 ms period. The value Q_{sbout} is defined implicitly by the relevant tests in [2];

- over the previous 160 ms, no transport block has been received with a correct CRC

If the UE detects the beacon channel reception level [10 dB] above the handover triggering level, the UE shall use 320 ms estimation period for the burst quality evaluation and for the Special Burst and CRC detection window.

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

- the UE estimates the received burst reception quality over the last 160 ms period to be better than a threshold Q_{in}. The value, Q_{in} is defined implicitly by the relevant tests in [2].
- the UE detects at least one Special Burst with quality above a threshold Q_{sbin} within the last 160 ms period. The value, Q_{sbin}, is defined implicitly by the relevent tests in [2].
- at least one transport block with a CRC attached is received in a TTI ending in the current frame with correct CRC.

If the UE detects the beacon channel reception level [10 dB] above the handover triggering level, the UE uses 320 ms estimation period for the burst quality evaluation and for the Special Burst detection window.

If no data are provided by higher layers for transmission during the second phase on the downlink dedicated channel then DTX shall be applied as defined in section 4.5.

How the primitives are used by higher layers is described in [15]. The above definitions may lead to radio frames where neither the In-Sync nor Out-of-Sync primitives are reported.

4.4.2.1.2a Downlink synchronisation primitives for HS-channels (3.84Mcps TDD only)

In the case that an uplink DPCH has been configured by higher layers but a downlink DPCH has not been configured, the UE shall report downlink synchronisation status based upon other downlink physical channels.

The UE shall monitor the received beacon signal level within the cell and shall average the received beacon power over a period of 160ms. This averaged value is denoted P_b dBm. The UE shall also monitor and average over the same period, the ISCP on the assigned HS-SCCH resources. This value is denoted $I_{HS\text{-}SCCH}$ dBm. A quality value Q_{hs} is formed as follows:

$$Q_{hs} = P_b - I_{HS\text{-}SCCH} + D_{hs\text{-}sync}$$

- where $D_{hs\text{-}sync}$ is signalled by higher layers.

In-sync shall be reported using the CPHY-Sync-IND primitive each time an HS-DSCH CRC pass is detected. On this event, an indicator maintained by the UE termed "HS-DSCH_failure" shall be set to 'false'. In-sync shall also be reported if the HS-DSCH_failure indicator is set to 'false' and during the last 160ms period, $Q_{hs} > Q_{hsin}$, where Q_{hsin} is a quality threshold defined implicitly by the relevant tests in [2].

Out-of-sync shall be reported using the CPHY-Out-of-Sync-IND primitive. "Out-of-sync" is generated in the event that, during the last 160ms period, $Q_{hs} < Q_{hsout}$, where Q_{hsout} is a quality threshold defined implicitly by the relevant tests in [2]. CPHY-Out-of-Sync-IND shall also be generated in the event of 16 successive HS-DSCH CRC failures. On occurrence of this event, the HS-DSCH_failure indicator shall be set to 'true'.

How the primitives are used by higher layers is described in [15]. The above definitions may lead to radio frames where neither the In-Sync nor Out-of-Sync primitives are reported. They may also, under some circumstances, lead to radio frames in which both In-Sync and Out-of-Sync primitives are generated. In this instance, In-sync shall override Out-of-Sync and the Out-of-Sync primitive shall not be reported.

5.3.2 DCH synchronization

The DPCH synchronisation is the same as that of 3,84 Mcps TDD, cf. [4.4.2 Dedicated channel synchronisation] with the exception that downlink synchronisation procedures based on HS-channels (subclause 4.4.2.1.2a) are not applicable to the 1.28Mcps TDD mode.