TSG-RAN Meeting #13 **_RP-010537_**
Beijing, China, 18 - 21 September 2001

Title: **Agreed CRs (Release '99 and Rel-4 category A) to TS 25.302**

Source: **TSG-RAN WG2**

Agenda item: **8.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-011913	agreed	25.302	097	3	R99	Transmission of selected ASC to physical layer	F	3.9.0	3.10.0
R2-012033	agreed	25.302	098		Rel-4	Transmission of selected ASC to physical layer	A	4.1.0	4.2.0
R2-012006	agreed	25.302	107	1	R99	Corrected definition of the CCTrCH concerning BCH, RACH and CPCH	F	3.9.0	3.10.0
R2-012188	agreed	25.302	108		Rel-4	Corrected definition of the CCTrCH concerning BCH, RACH and CPCH	A	4.1.0	4.2.0
R2-012034	agreed	25.302	109	1	R99	Transport Format Set Annex Correction	F	3.9.0	3.10.0
R2-012035	agreed	25.302	110		Rel-4	Transport Format Set Annex Correction	A	4.1.0	4.2.0
R2-012007	agreed	25.302	111	1	R99	Corrections on un-supported features	F	3.9.0	3.10.0
R2-012008	agreed	25.302	112		Rel-4	Corrections on un-supported features	A	4.1.0	4.2.0

CR-Form-v4

CHANGE REQUEST

⌘	**25.302**	**CR**	**097**	⌘ ev	**r3**	⌘ Current version:	**3.9.0**	⌘

*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 [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Transmission of selected ASC to physical layer	
Source:	⌘	TSG-RAN WG2	
Work item code:	⌘	TEI	***Date:*** ⌘ 2001. 8. 20
Category:	⌘	**F** *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.	***Release:*** ⌘ R99 *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:	⌘	In case of FDD RACH procedure, physical layer should have information about the selected ASC by MAC in order to choose the access slot in Random Access Procedure. And the only primitive, transmitted to physical layer before the physical layer selects the access slot, is PHY-ACCESS-REQ. However, the primitive doesn't contain the information about selected ASC. And the primitive PHY-Data-REQ also require the parameter just for the TDD RACH procedure.
Summary of change:	⌘	Add the parameter (ASC selected for that Transport Block Set) to parameters of PHY-ACCESS-REQ. And the same parameter in PHY-Data-REQ is changed to be applied just for TDD RACH procedure. As editorial correction, FN_{cell} (which is a parameter for PHY-Data-REQ) is changed into CFN_{cell}. **Isolated Impact analysis:** This is a clarification that is made to avoid erroneous implementation, but can be seen as backwards compatible because it is in line with current WG2 assumptions. However it needs to be considered in an implementation.
Consequences if not approved:	⌘	

Clauses affected:	⌘	10.1, 10.1.1, 10.1.3	
Other specs affected:	⌘	[ ] Other core specifications	⌘ 25.302 v4.1.0, CR 098
		[ ] 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/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.

Table 5: Primitives between layer 1 and 2

Generic Name	Parameter			
	REQ	**IND**	**RESP**	**CNF**
PHY-Access	Transport Format subset (1), ASC selected for Transport Block Set to be transmitted (5)	Not Defined	Not Defined	access information (1)
PHY-Data	TFI, Transport Block Set, CFN_{CELL}, Paging Indicators (2), ASC selected for that Transport Block Set (3)	TFI, Transport Block Set, CRC check result, TD (4)	Not Defined	Not Defined
PHY-CPCH_Status	Transport Format subset (1)	Not Defined	Not Defined	Transport Format subset (1)
PHY-Status	Not Defined	Event value	Not Defined	Not Defined
NOTE (1): FDD only. NOTE (2): PCH only NOTE (3): TDD RACH only NOTE (4): optional, TDD only NOTE (5): FDD RACH only				

10.1.1 PHY-Access-REQ

The PHY-Access-REQ primitive is used to request access to either a RACH or a CPCH transport channel from the physical layer. A PHY-Access primitive is submitted once before the actual data for peer-to-peer communication is passed to the physical layer using the PHY-Data primitive. This primitive is used in FDD only.

Parameters:

- Transport Format subset.
- ASC selected for Transport Block Set to be transmitted (RACH only)

10.1.2 PHY-Access-CNF

The PHY-Access-CNF primitive is used to confirm that physical layer synchronisation has been established and that the physical layer is ready for data transmission using the PHY-Data primitive. This primitive is used in FDD only.

Parameters:

- access information.

10.1.3 PHY-Data-REQ

The PHY-Data primitives are used to request SDUs used for communications passed to and from the physical layer. One PHY-Data primitive is submitted every Transmission Time Interval for each Transport Channel.

Parameters:

- TFI;
- Transport Block Set;
- CFN_{CELL};
- Page Indicators (PIs) (PCH only).
- ASC selected for that Transport Block Set (TDD RACH only)

10.1.4 PHY-Data-IND

The PHY-Data primitives are used to indicate SDUs used for Layer 2 passed to and from the physical layer. One PHY-Data primitive is submitted every Transmission Time Interval for each Transport Channel.

Parameters:

- TFI;
- Transport Block Set;
- CRC check result;
- TD (RX Timing Deviation measurement) (optional, TDD only).

10.1.5 PHY-CPCH_Status-REQ

The PHY-CPCH_Status-REQ primitive is used by MAC to request CPCH status information that is broadcast on CSICH. The parameter Transport Format subset allows to restrict the CPCH status information request to a limited number of CPCH channels of the given CPCH set. This primitive is used in FDD only.

Parameters:

- Transport Format subset.

10.1.6 PHY-CPCH_Status-CNF

The PHY-CPCH_Status-CNF primitive is used by L1 to indicate CPCH status information that is broadcast on CSICH. Status information is represented in terms of a Transport format subset that is permitted to be employed by the UE. This primitive is used in FDD only.

Parameters:

- Transport Format subset

10.1.7 PHY-Status-IND

The PHY-Status-IND primitive can be used by the layer 1 to notify higher layers of an event that has occurred.

Parameters:

- Event value:
    - CPCH Emergency stop was completed;
    - CPCH Start of Message Indicator was received;
    - CPCH Start of Message Indicator was not received;
    - L1 hardware failure has occurred.
    - CPCH End of Transmission was received

10.2 Generic names of primitives between layers 1 and 3

The status primitives between layer 1 and 3 are shown in table 6.

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CHANGE REQUEST

⌘	**25.302**	**CR**	**098**	⌘	ev	**-**	⌘	Current version:	**4.1.0**	⌘

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Proposed change affects: ⌘ (U)SIM [ ] ME/UE [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Transmission of selected ASC to physical layer
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001. 8. 20
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:	⌘	In case of FDD and 1.28Mcps RACH procedure, physical layer should have information about the selected ASC by MAC in order to choose the access slot in Random Access Procedure. And the only primitive, transmitted to physical layer before the physical layer selects the access slot, is PHY-ACCESS-REQ. However, the primitive doesn't contain the information about selected ASC. And the primitive PHY-Data-REQ also require the parameter just for the 3.84Mcps TDD RACH procedure.
Summary of change:	⌘	Add the parameter (ASC selected for that Transport Block Set) to parameters of PHY-ACCESS-REQ. And the same parameter in PHY-Data-REQ is changed to be applied just for TDD RACH procedure. As editorial correction, FN_{cell} (which is a parameter for PHY-Data-REQ) is changed into CFN_{cell}. **Backwards compatibility analysis:** This is a clarification that is made to avoid erroneous implementation, but can be seen as backwards compatible because it is in line with current WG2 assumptions. However it needs to be considered in an implementation.
Consequences if not approved:	⌘	

Clauses affected:	⌘	10.1, 10.1.1, 10.1.2, 10.1.3		
Other specs affected:	⌘	[ ] Other core specifications	⌘	25.302 v3.9.0, CR 097r3
		[ ] Test specifications		
		[ ] O&M Specifications		
Other comments:	⌘			

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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.

- This type is used by a lower layer providing the requested service to confirm to the higher layer that the activity has been completed.

The primitives defined below are for local communications between MAC and L1, as well as RRC and L1 in the same protocol stack.

For the physical layer two sets of primitives are defined:

- **Primitives between layer 1 and 2:**
  - PHY - Generic name - Type: Parameters.
- **Primitives between layer 1 and the RRC entity:**
  - CPHY - Generic name - Type: Parameters.

NOTE: This is a logical description of the primitives and does not cover addressing aspects (e.g. Transport Channel ID, Physical Channel ID, start frame number or disconnect frame number).

10.1 Generic names of primitives between layers 1 and 2

The primitives between layer 1 and layer 2 are shown in table 7.

Table 7: Primitives between layer 1 and 2

Generic Name	Parameter			
	REQ	IND	RESP	CNF
PHY-Access	Transport Format subset (1), ASC selected for Transport Block Set to be transmitted (5)	Not Defined	Not Defined	access information (1)
PHY-Data	TFI, Transport Block Set, CFN_{CELL}, Paging Indicators (2), ASC selected for that Transport Block Set (3)	TFI, Transport Block Set, CRC check result, TD (4)	Not Defined	Not Defined
PHY-CPCH_Status	Transport Format subset (1)	Not Defined	Not Defined	Transport Format subset (1)
PHY-Status	Not Defined	Event value	Not Defined	Not Defined

NOTE (1): FDD only.
NOTE (2): PCH only
NOTE (3): 3.84Mcps TDD RACH only
NOTE (4): optional, TDD only
NOTE (5): FDD and 1.28Mcps TDD RACH only

10.1.1 PHY-Access-REQ

The PHY-Access-REQ primitive is used to request access to either a RACH or a CPCH transport channel from the physical layer. A PHY-Access primitive is submitted once before the actual data for peer-to-peer communication is passed to the physical layer using the PHY-Data primitive. This primitive is used in FDD and 1.28Mcps TDD only.

Parameters:

- Transport Format subset.
- ASC selected for Transport Block Set to be transmitted(RACH only)

10.1.2 PHY-Access-CNF

The PHY-Access-CNF primitive is used to confirm that physical layer synchronisation has been established and that the physical layer is ready for data transmission using the PHY-Data primitive. This primitive is used in FDD and 1.28Mcps TDD only.

Parameters:

- access information.

10.1.3 PHY-Data-REQ

The PHY-Data primitives are used to request SDUs used for communications passed to and from the physical layer. One PHY-Data primitive is submitted every Transmission Time Interval for each Transport Channel.

Parameters:

- TFI;
- Transport Block Set;
- CFN_{CELL};
- Page Indicators (PIs) (PCH only).
- ASC selected for that Transport Block Set (3.84Mcps TDD RACH only)

10.1.4 PHY-Data-IND

The PHY-Data primitives are used to indicate SDUs used for Layer 2 passed to and from the physical layer. One PHY-Data primitive is submitted every Transmission Time Interval for each Transport Channel.

Parameters:

- TFI;
- Transport Block Set;
- CRC check result;
- TD (RX Timing Deviation measurement) (optional, TDD only).

10.1.5 PHY-CPCH_Status-REQ

The PHY-CPCH_Status-REQ primitive is used by MAC to request CPCH status information that is broadcast on CSICH. The parameter Transport Format subset allows to restrict the CPCH status information request to a limited number of CPCH channels of the given CPCH set. This primitive is used in FDD only.

Parameters:

- Transport Format subset.

10.1.6 PHY-CPCH_Status-CNF

The PHY-CPCH_Status-CNF primitive is used by L1 to indicate CPCH status information that is broadcast on CSICH. Status information is represented in terms of a Transport format subset that is permitted to be employed by the UE. This primitive is used in FDD only.

Parameters:

- Transport Format subset

10.1.7 PHY-Status-IND

The PHY-Status-IND primitive can be used by the layer 1 to notify higher layers of an event that has occurred.

Parameters:

- Event value:

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Helsinki, Finland, Aug 27-31, 2001

CR-Form-v4

CHANGE REQUEST

⌘	**25.302**	**CR**	**107**	⌘	ev	**r1**	⌘	Current version:	**3.9.0** ⌘

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Proposed change affects: ⌘ (U)SIM [ ] ME/UE [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Corrected definition of the CCTrCH concerning BCH, RACH and CPCH		
Source:	⌘	TSG-RAN WG2		
Work item code:	⌘	TEI	***Date:*** ⌘	01-07-03
Category:	⌘	**F**	***Release:*** ⌘	R99
		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:	⌘	R2-011038 on the correction of the maximum number of CCTrCHs to be supported in 25.306 was agreed. In the course of the discussion, it became clear, that 25.212 consider BCH (and also RACH, CPCH) as a CCTrCH, while 25.302 does not do that explicitly.
Summary of change:	⌘	- The sentences: “There can only be one BCH (RACH, CPCH) TrCH and no other TrCH in a BCH (RACH, CPCH) CCTrCH.” were added - Figure 2, 3 and 4 by adding that BCH, CPCH and RACH are mapped to CCTRCHs were changed. Isolated impact analysis: The proposed changes align the WG2 documents with the terminology already used in WG1.
Consequences if not approved:	⌘	Inconsistency between TS 25.302 and TS 25.212

Clauses affected:	⌘	6.1, 6.2		
Other specs affected:	⌘	[ ] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘	25.302 v4.1.0, CR 108
Other comments:	⌘			

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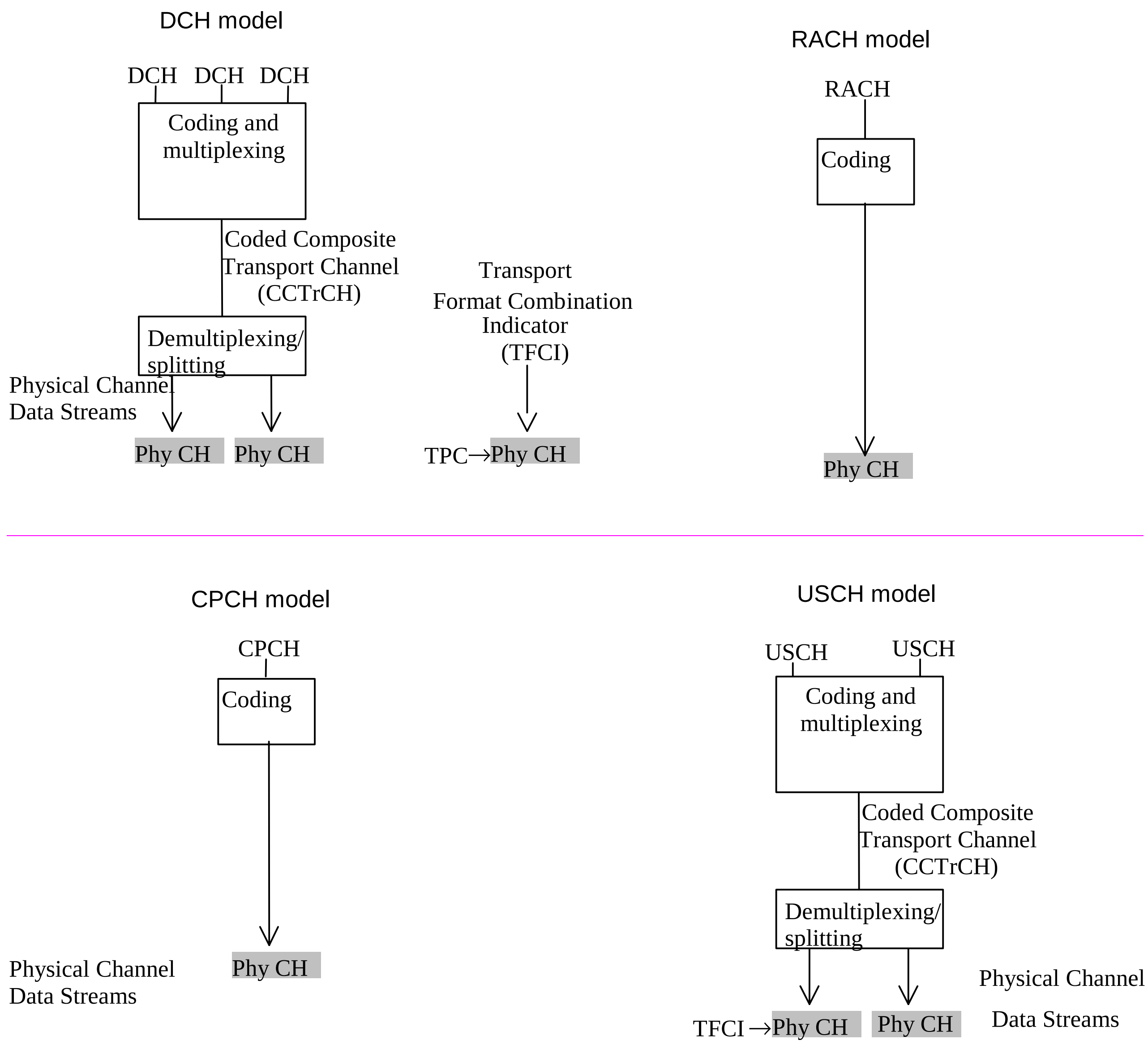
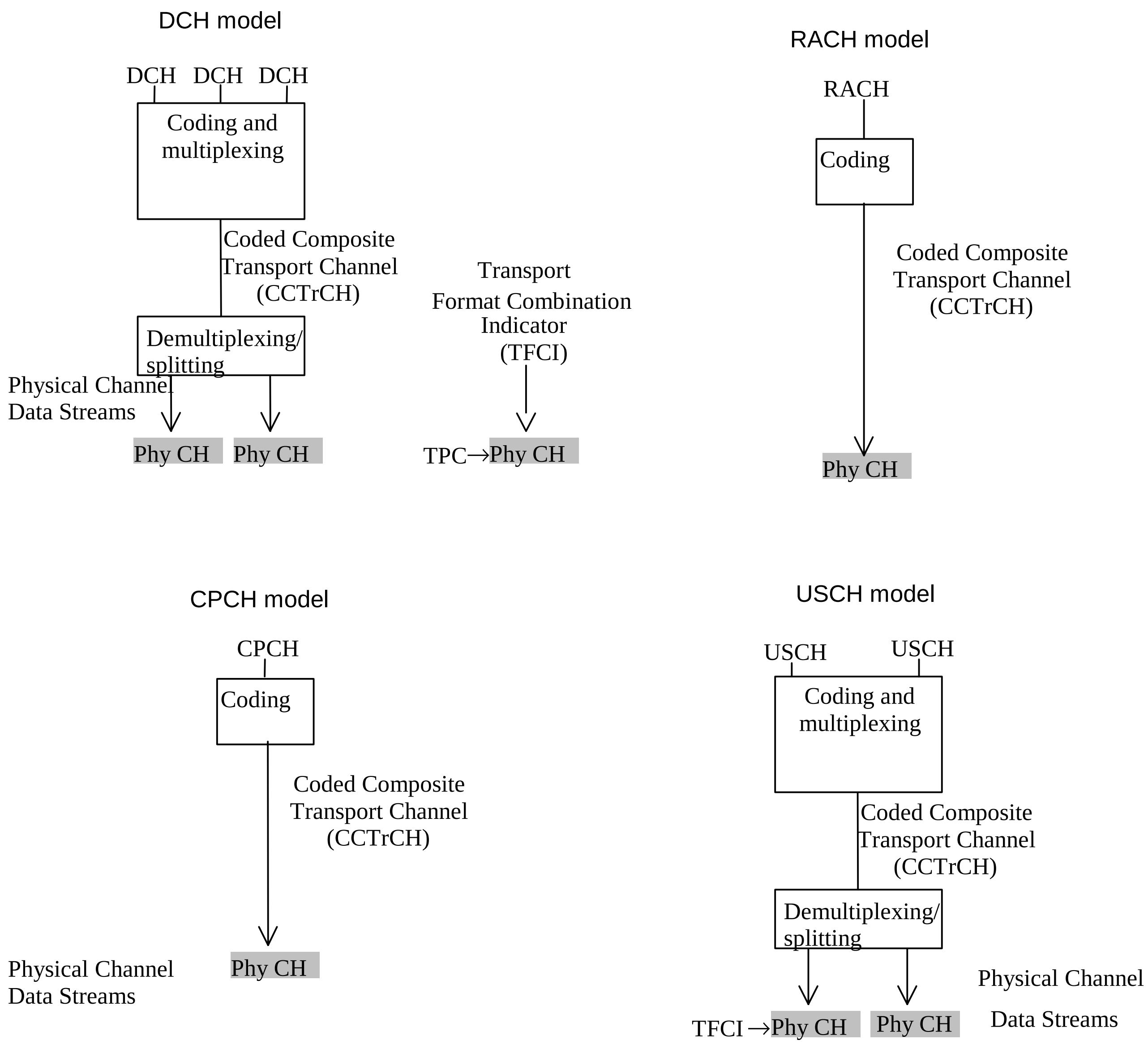
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.1 Uplink models

Figure 2 shows models of the UE's physical layer in the uplink for both FDD and TDD mode. It shows the models for DCH, RACH, CPCH (the latter two used in FDD mode only) and USCH (TDD only). Some restriction exist for the use of different types of transport channel at the same time, these restrictions are described in the clause "UE Simultaneous Physical Channel combinations". More details can be found in [3] and [4].


DCH model
DCH
DCH
DCH
Coding and multiplexing
Coded Composite Transport Channel (CCTrCH)
Demultiplexing/ splitting
Physical Channel Data Streams
Phy CH
Phy CH
Transport Format Combination Indicator (TFCI)
TPC→Phy CH
RACH model
RACH
Coding
Phy CH
CPCH model
CPCH
Coding
Physical Channel Data Streams
Phy CH
USCH model
USCH
USCH
Coding and multiplexing
Coded Composite Transport Channel (CCTrCH)
Demultiplexing/ splitting
TFCI →Phy CH
Phy CH
Physical Channel
Data Streams



NOTE 1: CPCH is for FDD only.

NOTE 2: USCH is for TDD only.

Figure 2: Model of the UE's physical layer - uplink

The DCH model shows that one or several DCHs can be processed and multiplexed together by the same coding and multiplexing unit. The detailed functions of the coding and multiplexing unit are not defined in the present document but in [3] and [4]. The single output data stream from the coding and multiplexing unit is denoted *Coded Composite Transport Channel (CCTrCH).*

The bits on a CCTrCH Data Stream can be mapped on the same Physical Channel and should have the same C/I requirement.

On the downlink, multiple CCTrCH can be used simultaneously with one UE. In the case of FDD, only one fast power control loop is necessary for these different CCtrCH, but the different CCtrCH can have different C/I requirements to provide different QoS on the mapped Transport Channels. In the case of TDD, different power control loops can be applied for different CCTrCH. One physical channel can only have bits coming from the same CCTrCH.

On the uplink and in the case of FDD, only one CCTrCH can be used simultaneously. On the uplink and in the case of TDD, multiple CCTrCH can be used simultaneously.

When multiple CCTrCH are used by one UE, one or several TFCI can be used, but each CCTrCH has only zero or one corresponding TFCI. In the case of FDD, these different words are mapped on the same DPCCH. In the case of TDD, these different TFCI can be mapped on different DPCH.

The data stream of the CCTrCH is fed to a data demultiplexing/splitting unit that demultiplexes/splits the CCTrCH's data stream onto one or several *Physical Channel Data Streams*.

The current configuration of the coding and multiplexing unit is either signalled to, or optionally blindly detected by, the network for each 10 ms frame. If the configuration is signalled, it is represented by the *Transport Format Combination Indicator (TFCI)* bits. Note that the TFCI signalling only consists of pointing out the current transport format combination within the already configured transport format combination set. In the uplink there is only one TFCI representing the current transport formats on all DCHs of one CCTrCH simultaneously. In FDD mode, the physical channel data stream carrying the TFCI is mapped onto the physical channel carrying the power control bits and the pilot. In TDD mode the TFCI is time multiplexed onto the same physical channel(s) as the DCHs. The exact locations and coding of the TFCI are signalled by higher layers.

The DCH and USCH have the possibility to perform Timing Advance in TDD mode.

The model for the RACH case shows that RACH is a common type transport channel in the uplink. RACHs are always mapped one-to-one onto physical channels (PRACHs), i.e. there is no physical layer multiplexing of RACHs, and there ~~. There~~ can only be one RACH TrCH and no other TrCH in a RACH CCTrCH. Service multiplexing is handled by the MAC layer. In one cell several RACHs/PRACHs may be configured. If more than one PRACH is configured in a cell, the UE performs PRACH selection as specified in [4].

In FDD, the RACHs mapped to the PRACHs may all employ the same Transport Format and Transport Format Combination Sets, respectively. It is however also possible that individual RACH Transport Format Sets are applied on each available RACH/PRACH.

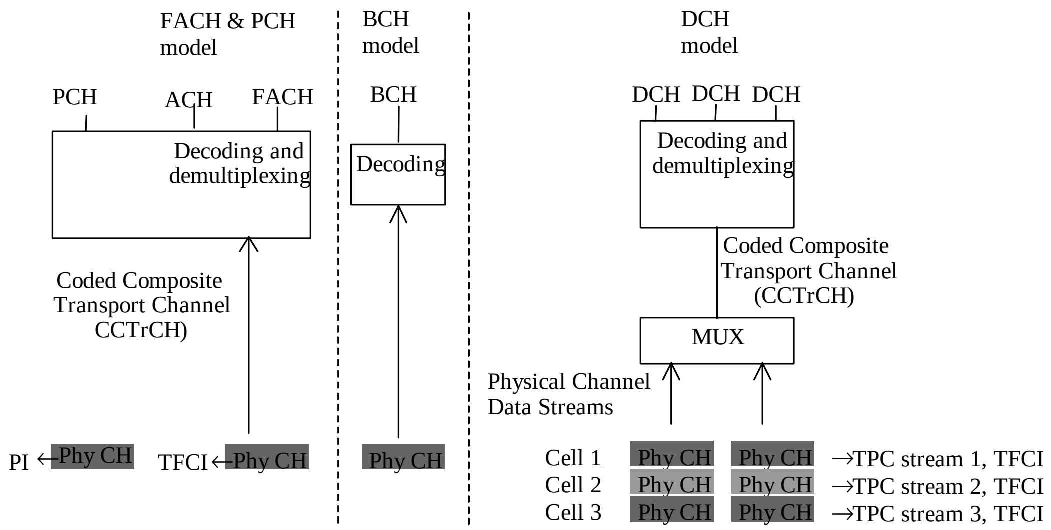
In TDD, there is no TFCI transmitted in the burst, and therefore each RACH is configured with a single transport format within its TFS. The RACHs mapped to the PRACHs may all employ the same Transport Format. It is however also possible that individual RACH Transport Formats are applied on each available RACH/PRACH combination.

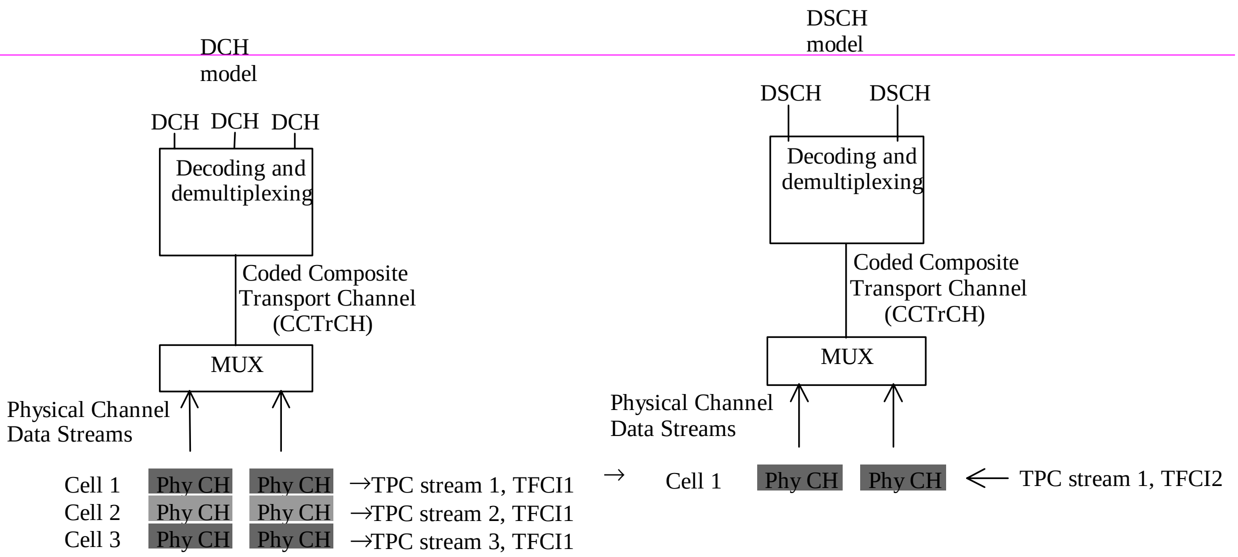
The available pairs of RACH and PRACHs and their parameters are indicated in system information. In FDD mode, the various PRACHs are distinguished either by employing different preamble scrambling codes, or by using a common scrambling code but distinct (non-overlapping) partitions of available signatures and available subchannels. In TDD mode, the various PRACHs are distinguished either by employing different timeslots, or by using a common timeslot but distinct (non-overlapping) partitions of available channelisation codes and available subchannels. Examples of RACH/PRACH configurations are given in [6].

The CPCH, which is another common type transport channel, has a physical layer model as shown in figure2. There is always a single CPCH transport channel mapped to a PCPCH physical channel which implies a one-to-one correspondence between a CPCH TFI and the TFCI conveyed on PCPCH. There can only be one CPCH TrCH and no other TrCH in a CPCH CCTrCH. A CPCH transport channel belongs to a CPCH set which is identified by the application of a common, CPCH set-specific scrambling code for access preamble and collision detection, and multiple PCPCH physical channels. Each PCPCH shall employ a subset of the Transport Format Combinations implied by the Transport Format Set of the CPCH set. A UE can request access to CPCH transport channels of a CPCH set, which is assigned when the service is configured for CPCH transmission.

6.2 Downlink models

Figure 3 and figure 4 show the model of the UE's physical layer for the downlink in FDD and TDD mode, respectively. Note that there is a different model for each transport channel type.





DCH associated with DSCH

Note (1) – TFCI1 indicates the DCH specific TFC and TFCI2 indicates the DSCH specific TFC and also the PDSCH channelisation code(s)

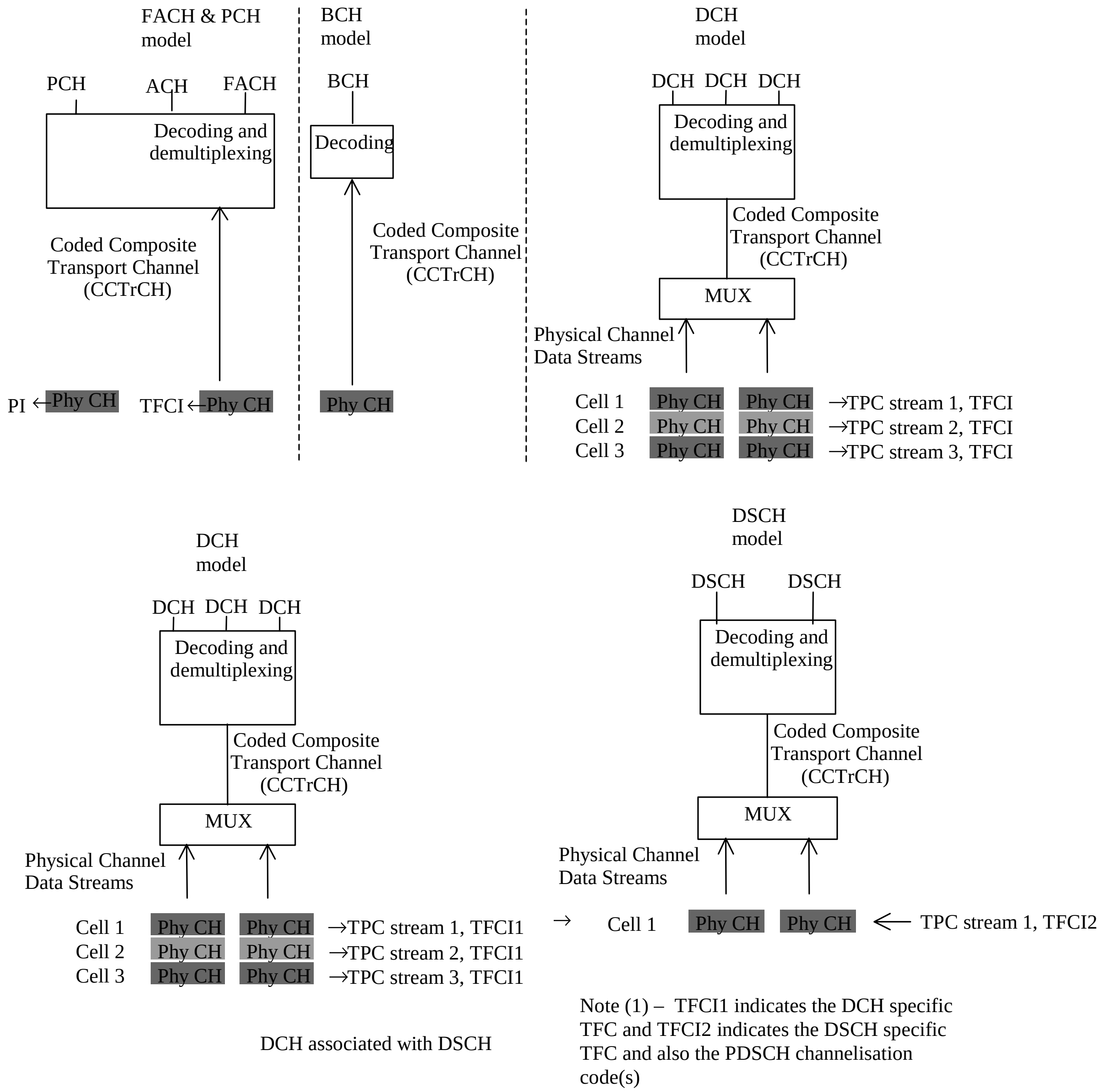
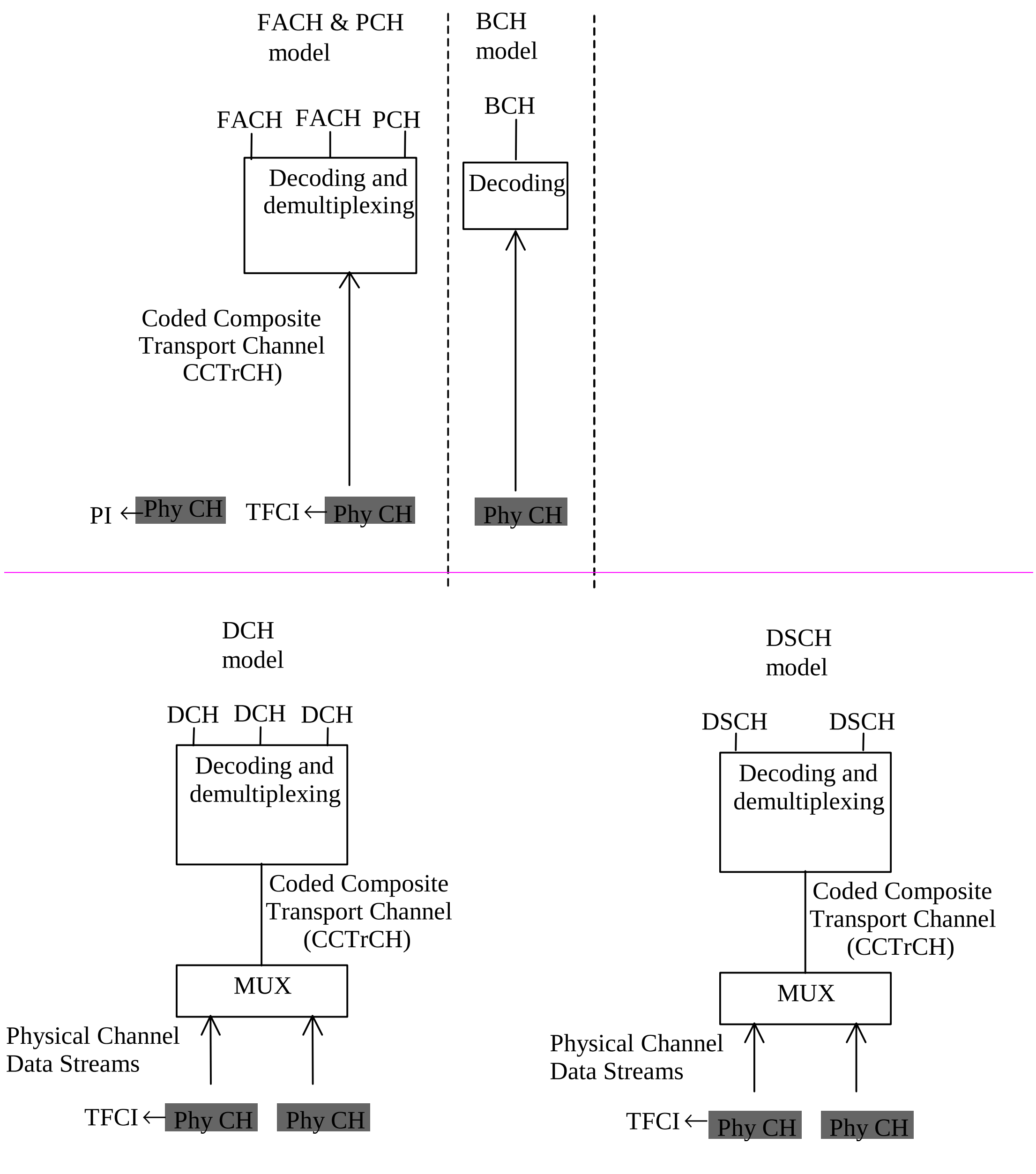


Figure 3: Model of the UE's physical layer - downlink FDD mode


FACH & PCH model
BCH model
FACH FACH PCH
BCH
Decoding and demultiplexing
Decoding
Coded Composite Transport Channel CCTrCH)
PI
Phy CH
TFCI
Phy CH
Phy CH
DCH model
DSCH model
DCH DCH DCH
DSCH DSCH
Decoding and demultiplexing
Decoding and demultiplexing
Coded Composite Transport Channel (CCTrCH)
Coded Composite Transport Channel (CCTrCH)
MUX
MUX
Physical Channel Data Streams
Physical Channel Data Streams
TFCI
Phy CH
Phy CH
TFCI
Phy CH
Phy CH

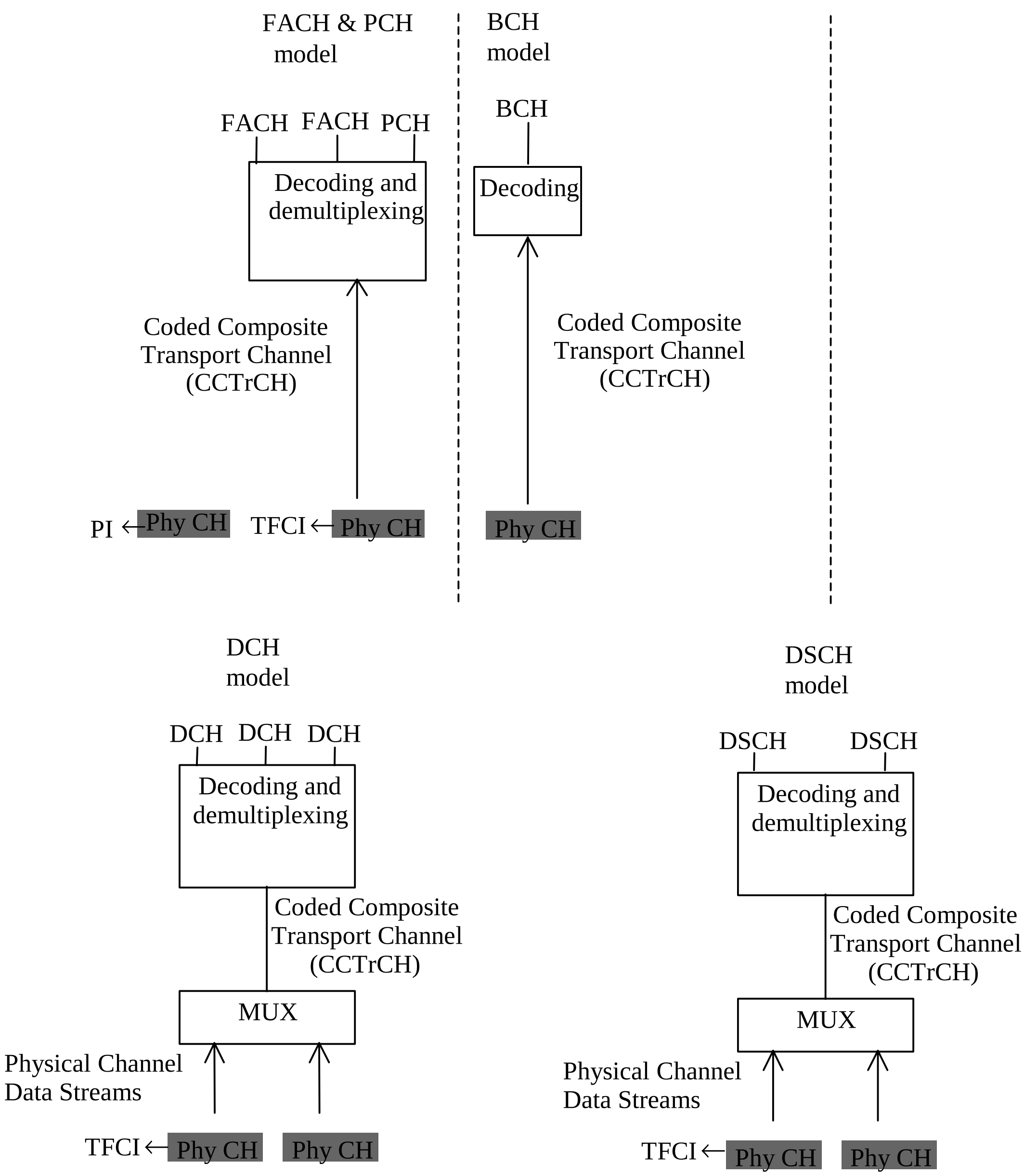


Figure 4: Model of the UE's physical layer – downlink TDD mode

For the DCH case, the mapping between DCHs and physical channel data streams works in the same way as for the uplink. Note however, that the number of DCHs, the coding and multiplexing etc. may be different in uplink and downlink.

In the FDD mode, the differences are mainly due to the soft and softer handover. Further, the pilot, TPC bits and TFCI are time multiplexed onto the same physical channel(s) as the DCHs. Further, the definition of physical channel data stream is somewhat different from the uplink. In TDD mode the TFCI is time multiplexed onto the same physical channel(s) as the DCHs. The exact locations and coding of the TFCI are signalled by higher layers.

Note that it is logically one and the same physical data stream in the active set of cells, even though physically there is one stream for each cell. The same processing and multiplexing is done in each cell. The only difference between the cells is the actual codes, and these codes correspond to the same spreading factor.

The physical channels carrying the same physical channel data stream are combined in the UE receiver, excluding the pilot, and in some cases the TPC bits. TPC bits received on certain physical channels may be combined provided that UTRAN has informed the UE that the TPC information on these channels is identical.

A PCH and one or several FACH can be encoded and multiplexed together forming a CCTrCH. Similarly as in the DCH model there is one TFCI for each CCTrCH for indication of the transport formats used on each PCH and FACH. The PCH is associated with a separate physical channel carrying page indicators (PIs) which are used to trigger UE reception of the physical channel that carries PCH. A FACH or a PCH can also be individually mapped onto a separate physical channel. The BCH is always mapped onto one physical channel without any multiplexing with other transport channels, and there~~.~~ ~~There~~ can only be one BCH TrCH and no other TrCH in a BCH CCTrCH.

3GPP TSG-RAN WG2 Meeting #23 **Tdoc R2-012188**

Helsinki, Finland, Aug 27-31, 2001

CR-Form-v4

CHANGE REQUEST

⌘	**25.302**	**CR**	**108**	⌘	ev	**-**	⌘ Current version:	**4.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM [ ] ME/UE [**X**] Radio Access Network [**X**] Core Network [ ]

Title:	⌘	Corrected definition of the CCTrCH concerning BCH, RACH and CPCH
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI ***Date:*** ⌘ 01-07-03
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:	⌘	R2-011038 on the correction of the maximum number of CCTrCHs to be supported in 25.306 was agreed. In the course of the discussion, it became clear, that 25.212 consider BCH (and also RACH, CPCH) as a CCTrCH, while 25.302 does not do that explicitly.
Summary of change:	⌘	- The sentences: "There can only be one BCH (RACH, CPCH) TrCH and no other TrCH in a BCH (RACH, CPCH) CCTrCH." were added - Figure 2, 3 and 4 by adding that BCH, CPCH and RACH are mapped to CCTRCHs were changed. Isolated impact analysis: The proposed changes align the WG2 documents with the terminology already used in WG1.
Consequences if not approved:	⌘	Inconsistency between TS 25.302 and TS 25.212

Clauses affected:	⌘	6.1, 6.2		
Other specs affected:	⌘	[ ] Other core specifications	⌘	25.302 v3.9.0, CR 107
		[ ] Test specifications		
		[ ] O&M Specifications		
Other comments:	⌘			

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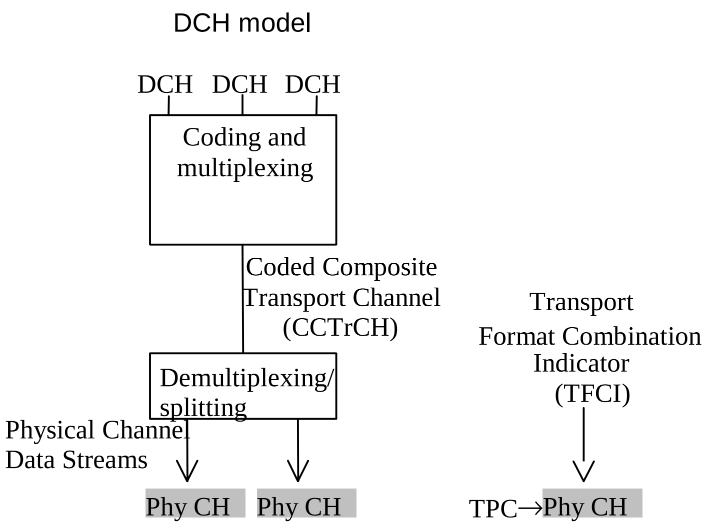
1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

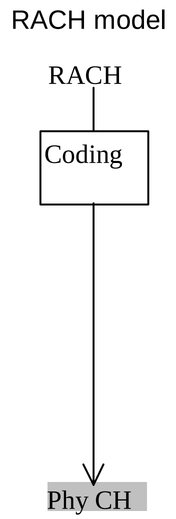
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

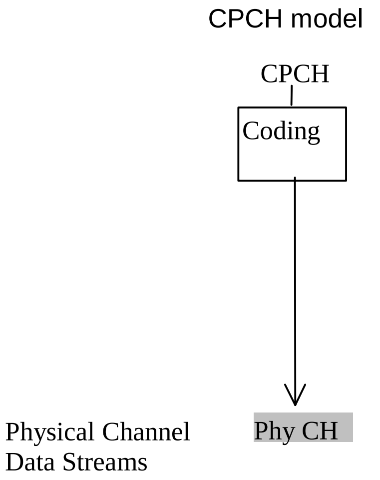
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

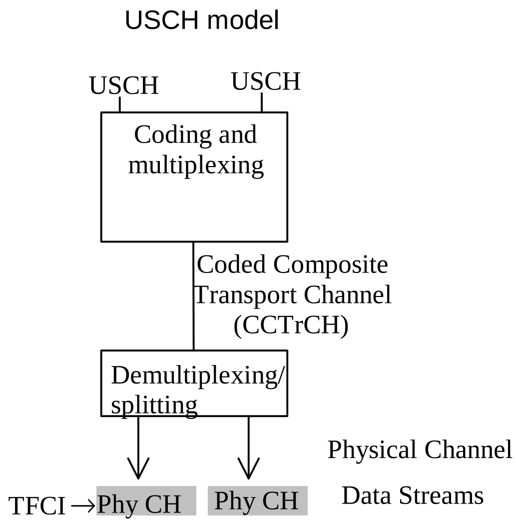
6.1 Uplink models

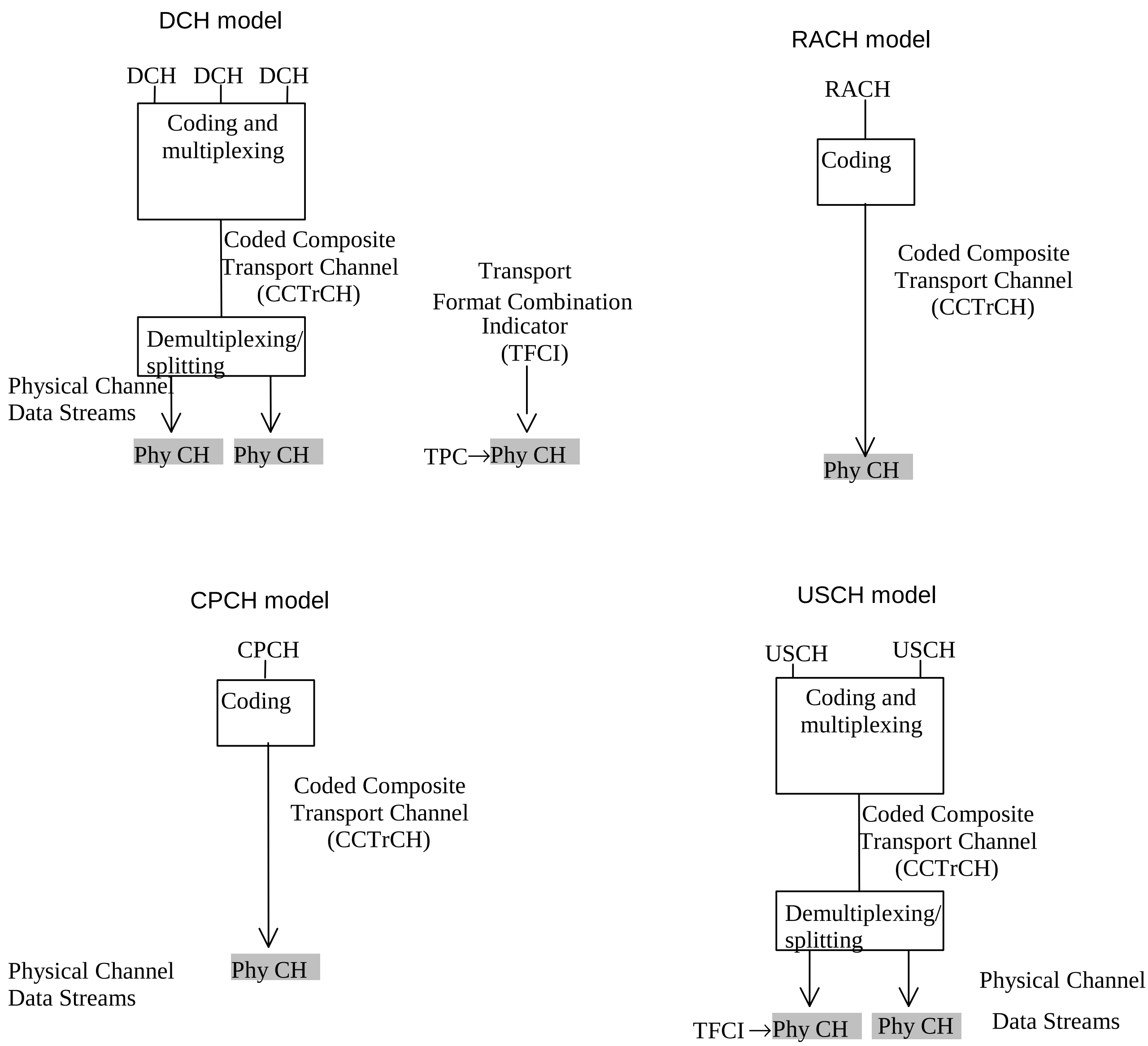
Figure 2 shows models of the UE's physical layer in the uplink for both FDD and TDD mode. It shows the models for DCH, RACH, CPCH (the latter two used in FDD mode only) and USCH (TDD only). Some restriction exist for the use of different types of transport channel at the same time, these restrictions are described in the clause "UE Simultaneous Physical Channel combinations". More details can be found in [3] and [4].


DCH model
DCH
DCH
DCH
Coding and multiplexing
Coded Composite Transport Channel (CCTrCH)
Demultiplexing/ splitting
Physical Channel Data Streams
Phy CH
Phy CH
Transport Format Combination Indicator (TFCI)
TPC→Phy CH


RACH model
RACH
Coding
Phy CH


CPCH model
CPCH
Coding
Physical Channel Data Streams
Phy CH


USCH model
USCH
USCH
Coding and multiplexing
Coded Composite Transport Channel (CCTrCH)
Demultiplexing/ splitting
TFCI →Phy CH
Phy CH
Physical Channel
Data Streams



NOTE 1: CPCH is for FDD only.

NOTE 2: USCH is for TDD only.

Figure 2: Model of the UE's physical layer - uplink

The DCH model shows that one or several DCHs can be processed and multiplexed together by the same coding and multiplexing unit. The detailed functions of the coding and multiplexing unit are not defined in the present document but in [3] and [4]. The single output data stream from the coding and multiplexing unit is denoted *Coded Composite Transport Channel (CCTrCH).*

The bits on a CCTrCH Data Stream can be mapped on the same Physical Channel and should have the same C/I requirement.

On the downlink, multiple CCTrCH can be used simultaneously with one UE. In the case of FDD, only one fast power control loop is necessary for these different CCtrCH, but the different CCtrCH can have different C/I requirements to provide different QoS on the mapped Transport Channels. In the case of TDD, different power control loops can be applied for different CCTrCH. One physical channel can only have bits coming from the same CCTrCH.

On the uplink and in the case of FDD, only one CCTrCH can be used simultaneously. On the uplink and in the case of TDD, multiple CCTrCH can be used simultaneously.

When multiple CCTrCH are used by one UE, one or several TFCI can be used, but each CCTrCH has only zero or one corresponding TFCI. In the case of FDD, these different words are mapped on the same DPCCH. In the case of TDD, these different TFCI can be mapped on different DPCH.

The data stream of the CCTrCH is fed to a data demultiplexing/splitting unit that demultiplexes/splits the CCTrCH's data stream onto one or several *Physical Channel Data Streams*.

The current configuration of the coding and multiplexing unit is either signalled to, or optionally blindly detected by, the network for each 10 ms frame. If the configuration is signalled, it is represented by the *Transport Format Combination Indicator (TFCI)* bits. Note that the TFCI signalling only consists of pointing out the current transport format combination within the already configured transport format combination set. In the uplink there is only one TFCI representing the current transport formats on all DCHs of one CCTrCH simultaneously. In FDD mode, the physical channel data stream carrying the TFCI is mapped onto the physical channel carrying the power control bits and the pilot. In TDD mode the TFCI is time multiplexed onto the same physical channel(s) as the DCHs. The exact locations and coding of the TFCI are signalled by higher layers.

The DCH and USCH have the possibility to perform Timing Advance in TDD mode.

The model for the RACH case shows that RACH is a common type transport channel in the uplink. RACHs are always mapped one-to-one onto physical channels (PRACHs), i.e. there is no physical layer multiplexing of RACHs, and there ~~.~~ ~~There~~ can only be one RACH TrCH and no other TrCH in a RACH CCTrCH. Service multiplexing is handled by the MAC layer. In one cell several RACHs/PRACHs may be configured. If more than one PRACH is configured in a cell, the UE performs PRACH selection as specified in [4].

In FDD, the RACHs mapped to the PRACHs may all employ the same Transport Format and Transport Format Combination Sets, respectively. It is however also possible that individual RACH Transport Format Sets are applied on each available RACH/PRACH.

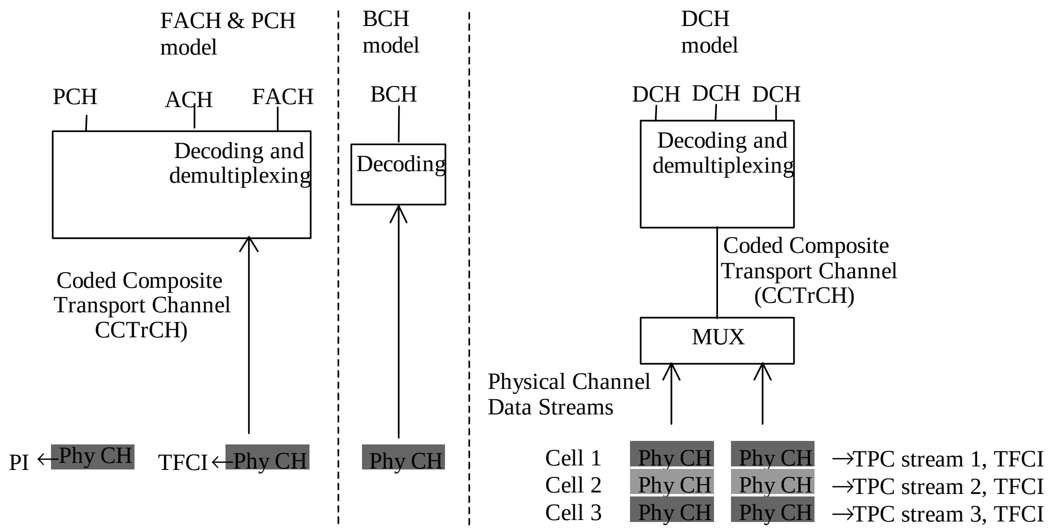
In TDD, there is no TFCI transmitted in the burst, and therefore each RACH is configured with a single transport format within its TFS. The RACHs mapped to the PRACHs may all employ the same Transport Format. It is however also possible that individual RACH Transport Formats are applied on each available RACH/PRACH combination.

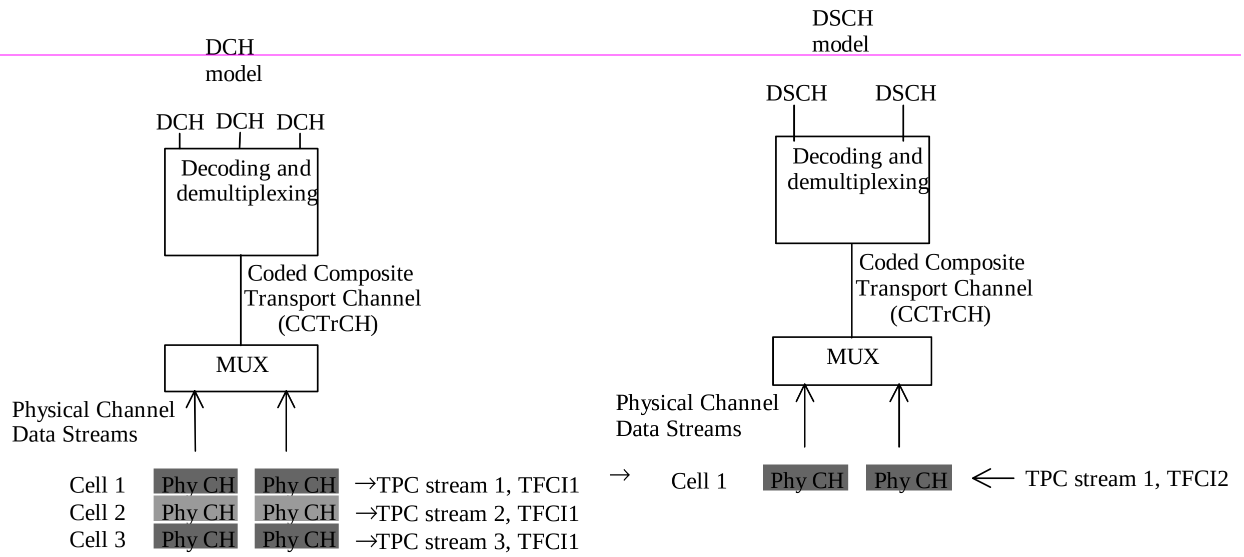
The available pairs of RACH and PRACHs and their parameters are indicated in system information. In FDD mode, the various PRACHs are distinguished either by employing different preamble scrambling codes, or by using a common scrambling code but distinct (non-overlapping) partitions of available signatures and available subchannels. In TDD mode, the various PRACHs are distinguished either by employing different timeslots, or by using a common timeslot but distinct (non-overlapping) partitions of available channelisation codes and available subchannels. Examples of RACH/PRACH configurations are given in [6].

The CPCH, which is another common type transport channel, has a physical layer model as shown in figure2. There is always a single CPCH transport channel mapped to a PCPCH physical channel which implies a one-to-one correspondence between a CPCH TFI and the TFCI conveyed on PCPCH. There can only be one CPCH TrCH and no other TrCH in a CPCH CCTrCH. A CPCH transport channel belongs to a CPCH set which is identified by the application of a common, CPCH set-specific scrambling code for access preamble and collision detection, and multiple PCPCH physical channels. Each PCPCH shall employ a subset of the Transport Format Combinations implied by the Transport Format Set of the CPCH set. A UE can request access to CPCH transport channels of a CPCH set, which is assigned when the service is configured for CPCH transmission.

6.2 Downlink models

Figure 3 and figure 4 show the model of the UE's physical layer for the downlink in FDD and TDD mode, respectively. Note that there is a different model for each transport channel type.





DCH associated with DSCH

Note (1) – TFCI1 indicates the DCH specific TFC and TFCI2 indicates the DSCH specific TFC and also the PDSCH channelisation code(s)

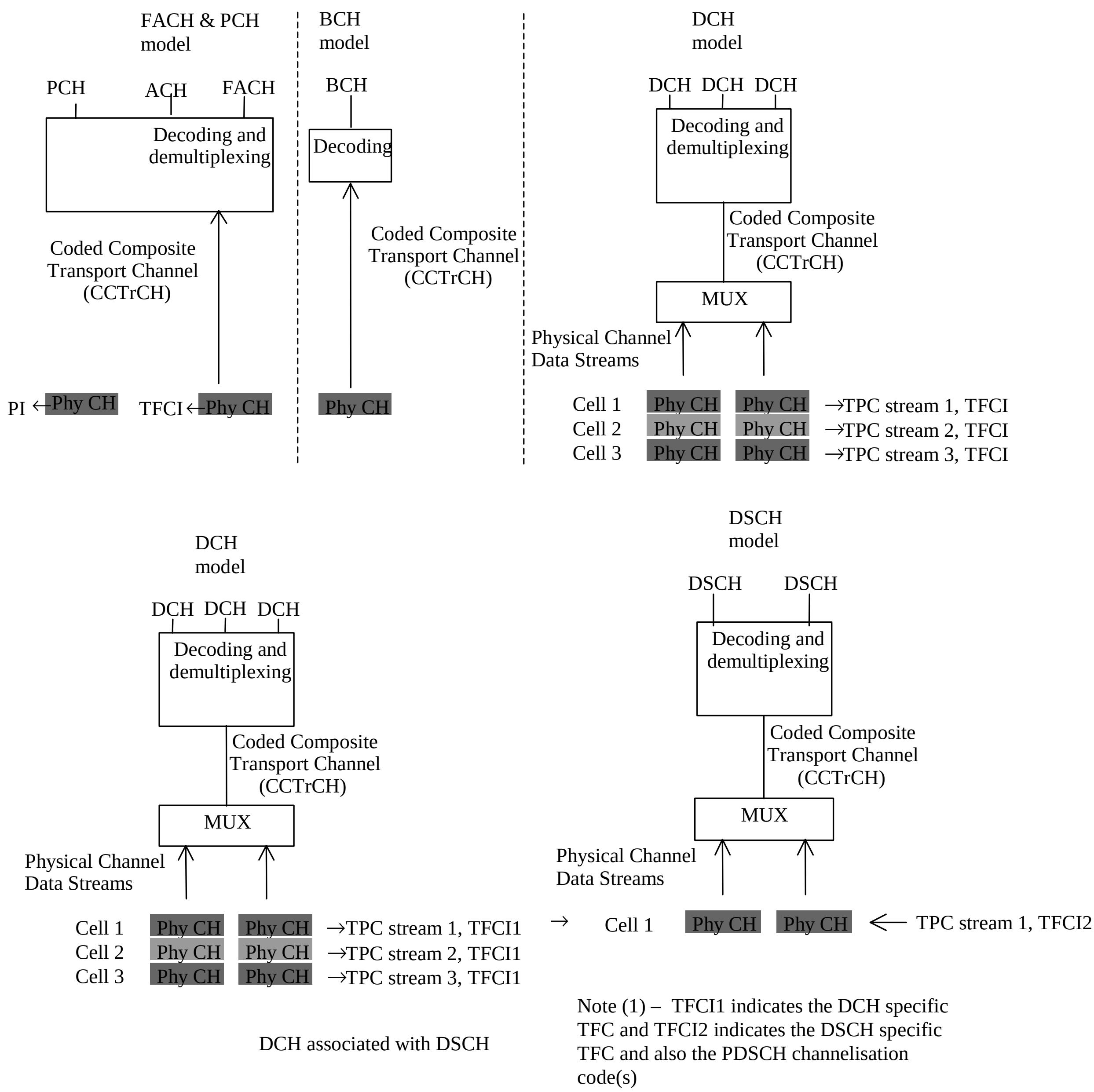
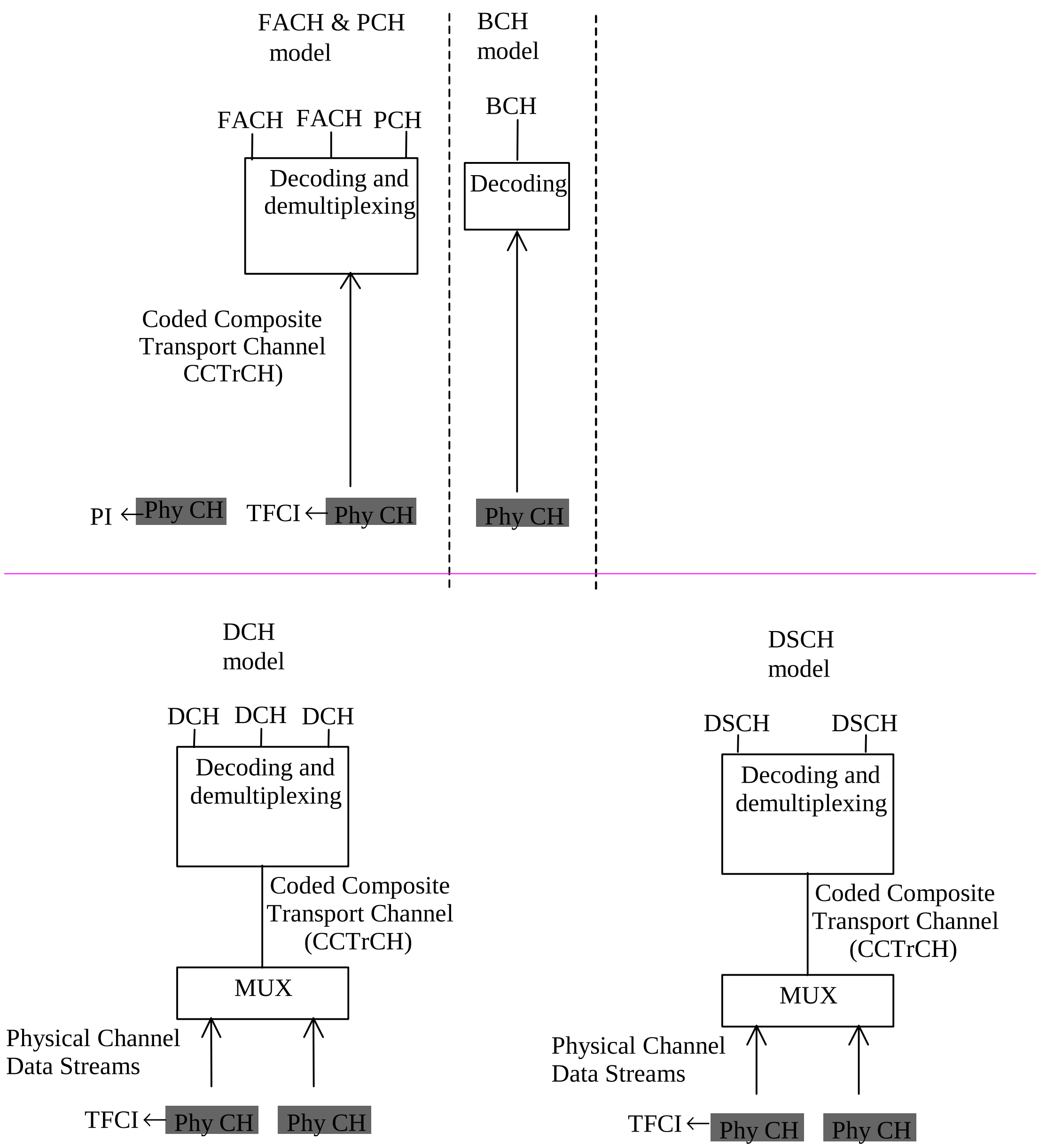


Figure 3: Model of the UE's physical layer - downlink FDD mode


FACH & PCH model
BCH model
FACH
FACH
PCH
BCH
Decoding and demultiplexing
Decoding
Coded Composite Transport Channel CCTrCH)
PI
Phy CH
TFCI
Phy CH
Phy CH
DCH model
DSCH model
DCH
DCH
DCH
DSCH
DSCH
Decoding and demultiplexing
Decoding and demultiplexing
Coded Composite Transport Channel (CCTrCH)
Coded Composite Transport Channel (CCTrCH)
MUX
MUX
Physical Channel Data Streams
Physical Channel Data Streams
TFCI
Phy CH
Phy CH
TFCI
Phy CH
Phy CH

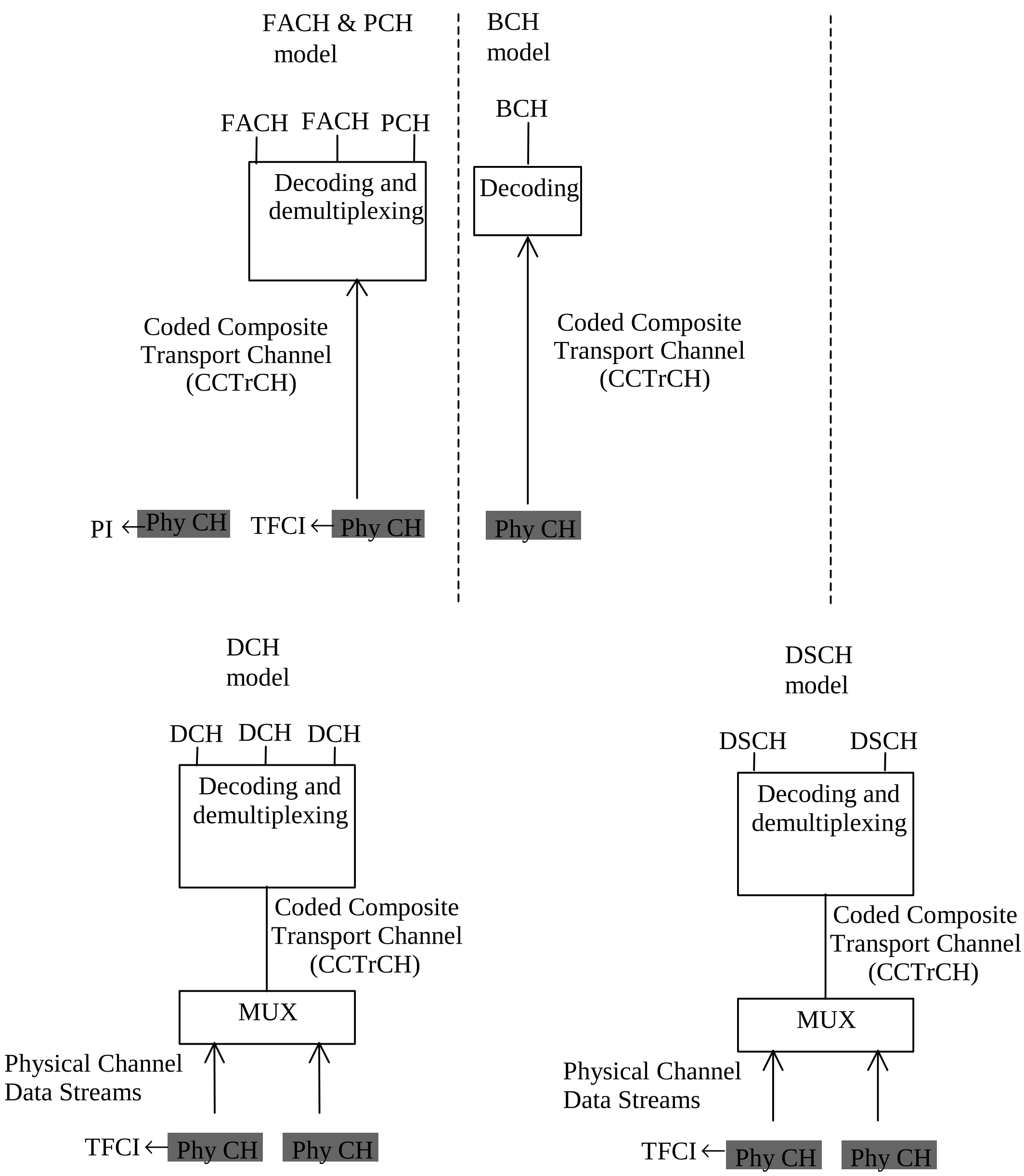


Figure 4: Model of the UE's physical layer – downlink TDD mode

For the DCH case, the mapping between DCHs and physical channel data streams works in the same way as for the uplink. Note however, that the number of DCHs, the coding and multiplexing etc. may be different in uplink and downlink.

In the FDD mode, the differences are mainly due to the soft and softer handover. Further, the pilot, TPC bits and TFCI are time multiplexed onto the same physical channel(s) as the DCHs. Further, the definition of physical channel data stream is somewhat different from the uplink. In TDD mode the TFCI is time multiplexed onto the same physical channel(s) as the DCHs. The exact locations and coding of the TFCI are signalled by higher layers.

Note that it is logically one and the same physical data stream in the active set of cells, even though physically there is one stream for each cell. The same processing and multiplexing is done in each cell. The only difference between the cells is the actual codes, and these codes correspond to the same spreading factor.

The physical channels carrying the same physical channel data stream are combined in the UE receiver, excluding the pilot, and in some cases the TPC bits. TPC bits received on certain physical channels may be combined provided that UTRAN has informed the UE that the TPC information on these channels is identical.

A PCH and one or several FACH can be encoded and multiplexed together forming a CCTrCH. Similarly as in the DCH model there is one TFCI for each CCTrCH for indication of the transport formats used on each PCH and FACH. The PCH is associated with a separate physical channel carrying page indicators (PIs) which are used to trigger UE reception of the physical channel that carries PCH. A FACH or a PCH can also be individually mapped onto a separate physical channel. The BCH is always mapped onto one physical channel without any multiplexing with other transport channels, and there~~.~~ ~~There~~ can only be one BCH TrCH and no other TrCH in a BCH CCTrCH.

3GPP TSG RAN2 Meeting #23
Helsinki, Finland, Aug 27-31, 2001

R2-012034

CR-Form-v4

CHANGE REQUEST

⌘	**25.302**	**CR**	**109**	⌘	ev	**r1**	⌘ Current version:	**3.9.0** ⌘

*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 [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘ Transport Format Set Annex Correction		
Source:	⌘ TSG-RAN WG2		
Work item code:	⌘ TEI	***Date:*** ⌘	28 Aug 2001
Category:	⌘ **F** *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.	***Release:*** ⌘	R99 *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: ⌘	There are errors of omission in normative Annex A in TS25.302 which describes transport formats in a table.
Summary of change: ⌘	TTI description and CRC description is added to TF table A1 for CPCH. TFS is correctly and completely specified in RRC spec TS25.331. Since TS35.331 is the more definitive spec, this change should have no impact on UEs.
Consequences if not approved: ⌘	Transport Format description is incorrect, and does not agree with descriptions in other specifications.

Clauses affected: ⌘	Annex A	
Other specs affected: ⌘	[X] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications	25.302 v4.1.0, CR110
Other comments: ⌘		

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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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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

Annex A (normative): Description of Transport Formats

The following table describes the characterisation of a Transport Format.

Table A.1: Characterisation of Transport Format

		Attribute values	BCH	PCH	FACH	RACH
Dynamic part	Transport Block Size	0 to 5 000 1 bit granularity	246	1 to 5000 1 bit granularity	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity
	Transport Block Set Size	0 to 200 000 1 bit granularity	246	1 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity
	Transmission Time Interval (option for TDD only)	10, 20 ms, 40 and 80 ms				
Semi-static part	Transmission Time Interval (FDD, option for TDD NRT bearers)	10, 20 ms, 40 and 80 ms	20 ms	10ms for FDD, 20ms for TDD	10, 20 ms, 40 and 80 ms	10 ms and 20 ms for FDD, 10 ms for TDD
	Type of channel coding	No Coding Turbo coding Convolutional coding	Convolutional coding	Convolutional coding	No coding Turbo coding Convolutional coding	Convolutional coding
	code rates	1/2, 1/3	1/2	1/2	1/2, 1/3	1/2
	CRC size	0, 8, 12, 16, 24	16	0, 8, 12, 16, 24	0, 8, 12, 16, 24	0, 8, 12, 16, 24
	Resulting ratio after static rate matching	0,5 to 4				

		Attribute values	CPCH	DCH	DSCH	USCH
Dynamic part	Transport Block Size	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity
	Transport Block Set Size	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity
	Transmission Time Interval (option for TDD only)	10, 20 ms, 40 and 80 ms		10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms
Semi-static part	Transmission Time Interval (FDD, option for TDD NRT bearers)	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms
	Type of channel coding	No coding Turbo coding Convolutional coding	No coding Turbo coding Convolutiona l coding	No coding Turbo coding Convolutional coding	No coding Turbo coding Convolutional coding	No coding Turbo coding Convolutiona l coding
	code rates (in case of convolutional coding)	1/2, 1/3	1/2, 1/3	1/2, 1/3	1/2, 1/3	1/2, 1/3
	CRC size	0, 8, 12, 16, 24	0, 8, 12, 16, 24	0, 8, 12, 16, 24	0, 8, 12, 16, 24	0, 8, 12, 16, 24
	Resulting ratio after static rate matching	0,5 to 4				

NOTE 1: The maximum size of the Transport Block has been chosen so as to avoid any need for segmentation in the physical layer into sub-blocks (segmentation should be avoided in the physical layer).

NOTE 2: Code rate is fixed to 1/3 in case of Turbo coding.

NOTE 3: All channels using the same resources as the BCH (i.e. the same timeslot and code, e.g. in a multiframe pattern) have to use different Transport Formats than the BCH to allow the identification of the BCH channel by physical layer parameters. Due to the differing parameters, decoding of other transport channels than BCH will result in an erroneous CRC.

3GPP TSG RAN2 Meeting #23
Helsinki, Finland, Aug 27-31, 2001

R2-012035

CR-Form-v4

CHANGE REQUEST

⌘	TS25.302	CR 110	⌘	ev r1	⌘	Current version: 4.1.0	⌘

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Proposed change affects: ⌘ (U)SIM [ ] ME/UE [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Transport Format Set Annex Correction
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	28 Aug 2001
Category:	⌘	**A**
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:	⌘	There are errors of omission in normative Annex A in TS25.302 which describes transport formats in a table.
Summary of change:	⌘	TTI description and CRC description is added to TF table A1 for CPCH. TFS is correctly and completely specified in RRC spec TS25.331. Since TS35.331 is the more definitive spec, this change should have no impact on UEs.
Consequences if not approved:	⌘	Trasnsport Format description is incorrect, and does not agree with descriptions in other specifications.

Clauses affected:	⌘	Annex A		
Other specs affected:	⌘	[ ] Other core specifications	⌘	25.302 v3.9.0, CR 109r1
		[ ] Test specifications		
		[ ] O&M Specifications		
Other comments:	⌘			

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Annex A (normative): Description of Transport Formats

The following table describes the characterisation of a Transport Format.

Table A.1: Characterisation of Transport Format

		Attribute values	BCH	PCH	FACH	RACH
Dynamic part	Transport Block Size	0 to 5 000 1 bit granularity	246	1 to 5000 1 bit granularity	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity
	Transport Block Set Size	0 to 200 000 1 bit granularity	246	1 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity
	Transmission Time Interval (option for TDD only)	10, 20 ms, 40 and 80 ms				
Semi-static part	Transmission Time Interval (FDD, option for TDD NRT bearers)	10, 20 ms, 40 and 80 ms	20 ms	10ms for FDD, 20ms for TDD	10, 20 ms, 40 and 80 ms	10 ms and 20 ms for FDD, 10 ms for TDD
	Type of channel coding	No Coding Turbo coding Convolutional coding	Convolutional coding	Convolutional coding	No coding Turbo coding Convolutional coding	Convolutional coding
	code rates	1/2, 1/3	1/2	1/2	1/2, 1/3	1/2
	CRC size	0, 8, 12, 16, 24	16	0, 8, 12, 16, 24	0, 8, 12, 16, 24	0, 8, 12, 16, 24
	Resulting ratio after static rate matching	0,5 to 4				

		Attribute values	CPCH	DCH	DSCH	USCH
Dynamic part	Transport Block Size	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity	0 to 5 000 1 bit granularity
	Transport Block Set Size	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity	0 to 200 000 1 bit granularity
	Transmission Time Interval (option for TDD only)	10, 20 ms, 40 and 80 ms		10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms
Semi-static part	Transmission Time Interval (FDD, option for TDD NRT bearers)	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms	10, 20 ms, 40 and 80 ms
	Type of channel coding	No coding Turbo coding Convolutional coding	No coding Turbo coding Convolutional coding	No coding Turbo coding Convolutional coding	No coding Turbo coding Convolutional coding	No coding Turbo coding Convolutional coding
	code rates (in case of convolutional coding)	1/2, 1/3	1/2, 1/3	1/2, 1/3	1/2, 1/3	1/2, 1/3
	CRC size	0, 8, 12, 16, 24	0, 8, 12, 16, 24	0, 8, 12, 16, 24	0, 8, 12, 16, 24	0, 8, 12, 16, 24
	Resulting ratio after static rate matching	0,5 to 4				

NOTE 1: The maximum size of the Transport Block has been chosen so as to avoid any need for segmentation in the physical layer into sub-blocks (segmentation should be avoided in the physical layer).

NOTE 2: Code rate is fixed to 1/3 in case of Turbo coding.

NOTE 3: All channels using the same resources as the BCH (i.e. the same timeslot and code, e.g. in a multiframe pattern) have to use different Transport Formats than the BCH to allow the identification of the BCH channel by physical layer parameters. Due to the differing parameters, decoding of other transport channels than BCH will result in an erroneous CRC.

3GPP TSG-RAN 2 Meeting #23
Helsinki, Finland, 27th - 31st August 2001

Tdoc R2-012007

CR-Form-v4

CHANGE REQUEST

⌘	**25.302**	**CR**	**111**	⌘	ev	**r1**	⌘	Current version:	**3.9.0** ⌘

*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 [X] Core Network [ ]

Title: ⌘	Correction to Types of Transport Channels description		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘	TEI	***Date:*** ⌘	17 August 2001
Category: ⌘	**F**	***Release:*** ⌘	R99
	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: ⌘	Beam-forming feature is not supported for FACH and CPCH any more as the S-CPICH is no longer associated with the S-CCPCH in 25.211. Inner loop power control is currently used instead of "fast power control" and FAUSCH does not exist Rel-99. Removal of relay link since ODMA is not supported in Rel-99.
Summary of change: ⌘	1- Beam-forming feature removed from FACH and CPCH description, 2- Fast power control is renamed inner loop power control, 3- Reference to FAUSCH is removed 4- Removal of radio relay term since ODMA is no longer part of the specifications **Isolated impact analysis:** These corrections remove functionality previously removed from within all other 3GPP specifications. This will not affect implementations implementing features supported within the 3GPP standards specifications.
Consequences if not approved: ⌘	Misleading the implementation and potential incompatibility of different vendors' products from a standardisation point of view.

Clauses affected: ⌘	3.2, 7.1, 7.2, 7.3	
Other specs affected: ⌘	[ ] [ ] [ ]	25.302 v4.1.0, CR 112
Other comments: ⌘		

How to create CRs using this form:

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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.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [3] apply.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ARQ	Automatic Repeat Request
BCCH	Broadcast Control Channel
BCH	Broadcast Channel
C-	Control-
CC	Call Control
CCC	CPCH Control Command
CCCH	Common Control Channel
CCH	Control Channel
CCTrCH	Coded Composite Transport Channel
CN	Core Network
CRC	Cyclic Redundancy Check
DC	Dedicated Control (SAP)
DCA	Dynamic Channel Allocation
DCCH	Dedicated Control Channel
DCH	Dedicated Channel
DL	Downlink
DRNC	Drift Radio Network Controller
DSCH	Downlink Shared Channel
DTCH	Dedicated Traffic Channel
FACH	Forward Link Access Channel
~~FAUSCH~~	~~Fast Uplink Signalling Channel~~
FCS	Fame Check Sequence
FDD	Frequency Division Duplex
GC	General Control (SAP)
HO	Handover
ITU	International Telecommunication Union
kbps	kilo-bits per second
L1	Layer 1 (physical layer)
L2	Layer 2 (data link layer)
L3	Layer 3 (network layer)
LAC	Link Access Control
LAI	Location Area Identity
MAC	Medium Access Control
MM	Mobility Management
Nt	Notification (SAP)
PCCH	Paging Control Channel
PCH	Paging Channel
PDU	Protocol Data Unit
PHY	Physical layer
PhyCH	Physical Channels
RACH	Random Access Channel
RLC	Radio Link Control
RNC	Radio Network Controller
RNS	Radio Network Subsystem
RNTI	Radio Network Temporary Identity
RRC	Radio Resource Control
SAP	Service Access Point
SDU	Service Data Unit

SRNC	Serving Radio Network Controller
SRNS	Serving Radio Network Subsystem
TCH	Traffic Channel
TDD	Time Division Duplex
TFCI	Transport Format Combination Indicator
TFI	Transport Format Indicator
TMSI	Temporary Mobile Subscriber Identity
TPC	Transmit Power Control
U-	User-
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunications System
URA	UTRAN Registration Area
UTRA	UMTS Terrestrial Radio Access
UTRAN	UMTS Terrestrial Radio Access Network

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NEXT SECTION

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7 Formats and configurations for L1 data transfer

7.1 General concepts about Transport Channels

Layer 2 is responsible for the mapping of data onto L1 via the L1/L2 interface that is formed by the transport channels. In order to describe how the mapping is performed and how it is controlled, some definitions and terms are required. The required definitions are given in the following subclauses. Note that the definitions are generic for all transport channel types, i.e. not only for DCHs.

All Transport Channels are defined as unidirectional (i.e. uplink~~,~~ or downlink~~, or relay-link~~). This means that a UE can have simultaneously (depending on the services and the state of the UE) one or several transport channels in the downlink, and one or more Transport Channel in the uplink.

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NEXT SECTION

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7.2 Types of Transport Channels

A general classification of transport channels is into two groups:

- common channels; and
- dedicated channels (where the UEs can be unambiguously identified by the physical channel, i.e. code and frequency).

Common transport channel types are:

1. Random Access Channel(s) (RACH) characterised by:
    - existence in uplink only;
    - limited data field;
    - collision risk;

- open loop power control.

2. Forward Access Channel(s) (FACH) characterised by:
   - existence in downlink only;
   - ~~possibility to use beam forming;~~
   - possibility to use slow power control;
   - possibility to change rate fast (each 10ms);
   - lack of ~~fast~~ inner loop power control.
3. Broadcast Channel (BCH) characterised by:
   - existence in downlink only;
   - low fixed bit rate; and
   - requirement to be broadcast in the entire coverage area of the cell.
4. Paging Channel (PCH) characterised by:
   - existence in downlink only;
   - association with a physical layer signal, the Page Indicator, to support efficient sleep mode procedures; and
   - requirement to be broadcast in the entire coverage area of the cell.
5. Downlink Shared Channel(s) (DSCH) characterised by:
   - existence in downlink only;
   - possibility to use beamforming;
   - possibility to use slow power control;
   - possibility to use inner loop ~~fast~~ power control, when associated with dedicated channel(s);
   - possibility to be broadcast in the entire cell;
   - always associated with another channel (DCH or FACH (TDD)).
6. CPCH Channel characterised by:
   - existence in FDD only;
   - existence in uplink only;
   - inner loop~~fast~~ power control on the message part;
   - ~~possibility to use beam forming;~~
   - possibility to change rate fast;
   - collision detection;
   - open loop power estimate for pre-amble power ramp-up.
7. Uplink Shared channel (USCH) characterised by:
   - used in TDD only;
   - existence in uplink only;
   - possibility to use beam forming;
   - possibility to use power control;

- possibility to change rate fast;
- possibility to use Uplink Synchronisation;~~,~~
- ~~Possibility~~ possibility to use Timing advance.

Dedicated transport channel type~~s are~~:

1. Dedicated Channel (DCH) characterised by:
   - existing in uplink or downlink;
   - possibility to use beam forming;
   - possibility to change rate fast (each 10ms);
   - inner loop~~fast~~ power control;
   - possibility to use timing advance in uplink (TDD only);
   - possibility to use Uplink Synchronisation.
2. ~~Fast Uplink Signalling Channel (FAUSCH) to allocate, in conjunction with FACH, dedicated channels; the FAUSCH is characterised by:~~
   - ~~existing in uplink only;~~
   - ~~inherent addressing of a UE by a unique time-offset (indicating to a UE when to send an uplink signalling code, USC) related to the beginning of the 10 ms frame;~~
   - ~~allowing for a UE to notify (by sending an USC) a request for a DCH, the allocation of which is messaged via the FACH. No further information is conveyed via the FAUSCH.~~

~~NOTE: Applicability for TDD mode is FFS.~~

To each transport channel, there is an associated Transport Format (for transport channels with a fixed or slow changing rate) or an associated Transport Format Set (for transport channels with fast changing rate).

7.3 Compressed Mode

Compressed Mode is defined as the mechanism whereby certain idle periods are created in radio frames so that the UE can perform measurements during these periods (more details can be found in [3]).

Compressed Mode is obtained by layer 2 using transport channels provided by the layer 1 as follows:

- compressed mode is controlled by the RRC layer, which configures the layer 2 and the physical layer;
- the number of occurrences of compressed frames is controlled by RRC, and can be modified by RRC signalling;
- it is under the responsibility of the layer 2 if necessary and if possible to either buffer some layer 2 PDUs (typically at the RLC layer for NRT services) or to rate-adapt the data flow (similarly to GSM) so that there is no loss of data because of compressed mode. This will be service dependent and controlled by the RRC layer.

For measurements in compressed mode, a transmission gap pattern sequence is defined. A transmission gap pattern sequence consists of alternating transmission gap patterns 1 and 2, and each of these patterns in turn consists of one or two transmission gaps. The transmission gap pattern structure, position and repetition are defined with physical channel parameters described in [~~3~~6]. In addition, the UTRAN configures compressed mode pattern sequences with the following parameters:

- **TGMP:** Transmission Gap pattern sequence Measurement Purpose: This parameter defines the purpose this transmission gap pattern sequence is intended for. The following values are used:
  - for TDD measurements, one compressed mode pattern sequence can be configured with purpose 'TDD measurement',

    - for FDD measurements, one compressed mode pattern sequence can be configured with purpose 'FDD measurement',
    - for GSM measurements, three simultaneous compressed mode pattern sequences can be configured with purposes 'GSM carrier RSSI measurement', 'Initial BSIC identification' and 'BSIC re-confirmation',

- **TGPSI:** Transmission Gap Pattern Sequence Identifier selects the compressed mode pattern sequence for which the parameters are to be set. The range of TGPSI is [1 to <MaxTGPS>].

The UE shall support a total number of simultaneous compressed mode pattern sequences, which is determined by the UE's capability to support each of the measurement types categorised by the TGMP. For example, a UE supporting FDD and GSM shall support four simultaneous compressed mode pattern sequences and a UE supporting FDD and TDD shall support two simultaneous compressed mode pattern sequences.

When using simultaneous pattern sequences, it is the responsibility of the NW to ensure that the compressed mode gaps do not overlap and are not scheduled to overlap the same frame. Gaps exceeding the maximum gap length shall not be processed by the UE and shall interpreted as a faulty message. If the UE detects overlapping gaps, it shall process the gap from the pattern sequence having the lowest TGPSI.

3GPP TSG-RAN 2 Meeting #23
Helsinki, Finland, 27th - 31st August 2001

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CHANGE REQUEST

⌘	**25.302 CR 112**	⌘	ev	⌘	Current version:	**4.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM [ ] ME/UE [ ] Radio Access Network [X] Core Network [ ]

Title: ⌘	Correction to Types of Transport Channels description		
Source: ⌘	TSG-RAN WG2		
Work item code: ⌘	TEI	***Date:*** ⌘	17 August 2001
Category: ⌘	**A** *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.	***Release:*** ⌘	REL-4 *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: ⌘	Beam-forming feature is not supported for FACH and CPCH any more as the S-CPICH is no longer associated with the S-CCPCH in 25.211. Inner loop power control is currently used instead of “fast power control" and FAUSCH does not exist Rel-99. Removal of relay link since ODMA is not supported in Rel-99 or Rel-4.
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Consequences if not approved: ⌘	Misleading the implementation and potential incompatibility of different vendors' products from a standardisation point of view.

Clauses affected: ⌘	3.2, 7.1, 7.2, 7.3	
Other specs affected: ⌘	[ ] [ ] [ ]	25.302 v3.9.0, CR 111r1
Other comments: ⌘		

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