TSG-RAN Working Group1 meeting #2
Yokohama 22-25, February 1999

Agenda Item: 8.10

Source: Panasonic, Vodafone, Siemens

Title: Recommendations on Merging Process for 3GPP TSG RAN WG1 specification document:
S1.21 TDD Transport Channels and Physical Channels Description

Document for: Decision

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1 Scope

Based on the recommendations in TSGR1#2(99)74, we summarise the proposed text changes for the S1.21 specification document: TDD Transport Channels and Physical Channels Description.

2 General Recommendations

The harmonisation of TDD and ODMA can not be solved by the TDD Ad Hoc. A practical way forward with this issue is suggested in TDoc (99)86.
However, all issues which have been identified as 'FFS' in the TSGR1#2(99)074 have of course to be reflected by updating the specification documents as soon as these issues have been settled.

3 Specific Recommendations

Recommendations for text adaptation are listed below according to the chapters from S1.21. Some explanatory text is given and printed in italics. When recommended text has been adapted, the editors notes currently included in S1.21 can be removed.

Chapter 6: Transport Channels

It is recommended to adopt the text of the WG2 document S2.02 as given below. This is done in order to avoid inconsistencies between the layers descriptions. The original text from chapter 6 should be removed and replaced by:

A general classification of transport channels is into two groups:

- common channels (where there is a need for in-band identification of the UEs when particular UEs are addressed) and
- dedicated channels (where the UEs are identified by the physical channel, i.e. code and frequency)

Common transport channel types are:

1. Random Access Channel(s) (RACH) characterized by:
    - existence in uplink only,
    - limited data field. The exact number of allowed bits is FFS.
    - collision risk,
    - open loop power control,
    - requirement for in-band identification of the UEs.
2. ODMA Random Access Channel(s) (ORACH) characterized by:
    - existence in relay-link
    - collision risk,

- open loop power control,
- no timing advance control
- requirement for in-band identification of the UE.

3. Forward Access Channel(s) (FACH) characterized 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 power control and
    - requirement for in-band identification of UEs.
4. Broadcast Channel (BCH) characterized by:
    - existence in downlink only,
    - low fixed bit rate and
    - requirement to be broadcast in the entire coverage area of the cell.
5. Paging Channel (PCH) characterized by:
    - existence in downlink only,
    - possibility for sleep mode procedures and
    - requirement to be broadcast in the entire coverage area of the cell.
6. Synchronisation channel (SCH) characterised by :
    - existence in downlink only
    - low fixed bit rate
    - requirement to be broadcast in the entire coverage area of the cell

Dedicated transport channel types are:

1. Dedicated Channel (DCH) characterized by:
    - existing in uplink or downlink
    - possibility to use beam forming,
    - possibility to change rate fast (each 10ms),
    - enhanced power control and
    - inherent addressing of UEs.

2. ODMA Dedicated Channel (ODCH) characterized by:
    - possibility to use beam forming,
    - possibility to change rate fast (each 10ms),
    - closed loop power control,
    - closed loop timing advance control,
    - temporary addressing of UE.

Chapter 7: Physical Channels

The numbering of the timeslots should be aligned with WG2 notation (cf. e.g. S2.04, Fig. 2), i.e. numbers from 0...15 should be used instead of 1...16.
For clarification, sentence 2 should read:

Depending on resource allocation, the configuration of radio frames or timeslots becomes different.
Instead of:
~~Depending on the physical channel and symbol rate, the configuration of radio frames or timeslots becomes different.~~

Chapter 7.1: Frame Structure

As ARIB and ETSI show many similarities, it is recommended to adopt the ETSI text and to add for additional clarification the following text according to the editors note:

- First time slot is allocated for downlink
- Multiple-switching-point configuration is supported from a fast power control and transmit space diversity point-of-view.
- All codes within the same timeslot are allocated to exclusively one of the following purposes:
  1) UL to Node B
  2) DL from Node B
  3) ODMA usage

Chapter 7.2: DEDICATED PHYSICAL CHANNEL (DPCH)

As the distinction of DPDCH and DPCCH is not needed in proposed scheme, these definitions can be removed. Thus, the following sentences should be erased according to the original ETSI text:
~~There are two types of dedicated channels, the Dedicated Physical Data Channel (DPDCH) and the Dedicated Physical Control Channel (DPCCH). The DPDCH carries dedicated data generated at Layer 2. The DPCCH carries control information generated at Layer 1.~~

Chapter 7.2.1: Spreading codes

The term 'spreading factor of scrambling code' is somewhat misleading and the sentence should read:
Spreading factor ~~of scrambling code~~ and the number of codes for multicode transmission are assigned independently for uplink and downlink. The number of timeslots is also assigned independently for uplink and downlink.

Chapter 7.2.1.2: Single code transmission with variable spreading

ETSI text should be adopted, thus square brackets should be removed. An editors note should be included:
[Editors note: Application of Joint Detection for downlink is still FFS]

Chapter 7.2.2: Burst Types

SF should be in the range 1-16. Application of TPC has to be evaluated. As TFCI is requirement from WG2 it should be kept in ETSI style. Support of two Burst types should be kept.
As a consequence the ETSI text should be accepted and a chapter added:

7.2.2.4 Transmission of TPC

<to be determined>

[Editors note: If Open Loop Power Control scheme for uplink is applied to TDD, TPC command may not be needed to be inserted into Downlink.]

The editors note can be deleted then.

Chapter 7.3.1.1: Spreading codes

ETSI text should be adopted

Chapter 7.3.1.2: Burst Types

ETSI text should be adopted, reference should be updated (section 7.2.2 instead of section 0)

Chapter 7.3.2: The physical random access channel (PRACH)

ETSI text should be adopted

Chapter 7.3.2.1: Spreading codes

ETSI text should be adopted

Chapter 7.3.2.2: Burst types

ETSI text should be adopted

Chapter 7.4: Physical synchronisation channel

ETSI text should be adopted. An editors note should be added:
[Editors Note: The detailed scheme of CCCH pointing by SCH is FFS]

Chapter 8: Mapping of transport channels to physical channels

ETSI text should be adopted

Chapter 8.2.1: The Broadcast Channel

ETSI text should be adopted. An editors note should be added:
[Editors Note: The detailed scheme of CCCH pointing by SCH is FFS]

Chapter 8.2.2: The Paging Channel

ETSI text should be adopted

Chapter 8.2.3: The Forward Access Channel

ETSI text should be adopted

Chapter 8.2.4: The Random Access Channel

ETSI text should be adopted