

**Agenda item :**  
**Source : Ad-hoc 11 chairman<sup>1</sup>**  
**Title : Ad-hoc 11 meeting report**  
**Document for : Approval**

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During WG1 meeting #3 in Nynäshamn an ad-hoc 11 meeting took place in order to finalise the discussion held in the WG1 reflector by E-mail. It was decided that the ad-hoc has no mandate to discuss services and therefore the discussion has been focused on physical layer capabilities (indicated as "service independent" in the discussion).

At the session the following documents were presented:

- R1-99147 "Principles for UE capabilities" by NTT DoCoMo
- R1-99215 "Physical layer capabilities to be included in release 99" by Omnitel Pronto Italia
- R1-99180 "Ad-hoc 11 Physical layer capabilities report" by ad-hoc chairman
- R1-99233 "Physical layer capabilities" by Mannesmann Mobilfunk, E-Plus Mobilfunk, Omnitel Pronto Italia, TIM/CSELT, France Telecom

Document 147 presented a list of requirements in order to be able to operate a third generation network in spring 2001. In particular, the following points were listed:

- 1) IMT-2000 terminals will be required same size and cost as that of the second-generation terminals.
- 2) The requirement of very small speech-service terminals that is highly competitive with the second generation is quite important.
- 3) Due to the short time scales for commercial service launch in Japan, only the technical proposals and descriptions that are defined in detail in the present can be specified.
- 4) Various improved techniques will be specified and commercialised additionally in the future, e.g. half-rate speech codec in the 2nd generation systems, thus it is essential to define classification of the terminals with phased approach.

Document 215 also presented a list of requirements summarised as follows:

- For the sake of compatibility between R'99 and the subsequent releases essential UTRAN characteristics have to be included in R'99.
- Optional features cannot be taken into account while planning a network; most pertinent items for UTRA:
  - Site Selection Diversity TX (SSDT)
  - TX Diversity (open and/or closed loop)
- Agreeing on a set of features, to be supported by all UE, would also facilitate roaming between network operators, which, after all is one of the main goals of defining a common standard.
- The main goal of UTRA is not to provide a service limited to speech or to data rates comparable to 2nd generation but rather to provide terminals with higher bit rates capabilities; it is desirable to limit the range of data speed capabilities of terminals on the market
- Basic requirements of all operators, members of the 3GPP organizational partners, should be taken into account when establishing essential physical layer capabilities .
- Close liaison with SA as to the foreseen application and the requirements on RAN WG1 should be established.

Document 180 is the chairman report summarising the discussion in the E-mail reflector. The document is provided as an annex to this report.

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Document 233 presented some proposals on capabilities to be indicated as mandatory or optional. The status of the proposals is given in the Section agreements. The document also proposed that ad-hoc 11 should focus its work on the following issues:

1. identify physical capabilities that impact the network planning and system performance (i.e., coverage, capacity, roaming and in general quality of service)
2. identify which transport and physical channels the different UE physical capability classes have to support (e.g., DSCH)
3. contribute to the definition of UE physical capability classes.

The group agreed that indications on physical layer capabilities classes should be provided as soon as possible.

### **Agreements**

From Tdocs 147 and 215 the following requirements were identified:

- it should be possible to have low cost/small size terminals
- the milestones of April and December 99 have to be fulfilled
- network planning issues have to be taken into account when defining optional/mandatory capabilities

On the basis of these requirements the ad-hoc agreed the following statements:

- what is not fully specified (by December) is not in release 99
- physical layer capabilities affecting L1 performance are to included as mandatory in release 99

The ad-hoc indicated a two-step approach to provide indications on physical layer capabilities:

1. identify physical capabilities that impact the network planning and system performance (i.e., identify basic capabilities)
2. identify physical capabilities that are related to a UE physical layer capability class

On the basis of this approach, the group agreed that indications on physical layer capabilities classes should be provided as soon as possible.

It was also decided to a liaison should be drafted by WG1, clarifying the work to be carried out by WG1 on the definition of physical layer capability classes. The liaison should be approved by RAN plenary and distributed to TSG SA WG1 and to TSG T.

On the basis of Tdoc 180 it was agreed the following statements:

#### **Physical layer capabilities capabilities (“service independent capabilities”)**

- add a new section to S1.02 “UE capabilities” in order to indicate what has to be mandatory in the UE

- add a section (or an indication within each section) whether an item described in the S1.xx documents is mandatory or not (both network and terminal side)

#### **Capabilities relevant to specific UE physical layer capability classes**

It is recommended to include the following statement in S1.01 “General description”:

When network elements (UEs and network) provide compatible service bearers (for example support a speech bearer) they should be assured of successful interworking. Moreover, different implementation options of the same (optional) feature would lead to incompatibility between UE and network. Therefore, this shall be avoided.

Based on Tdoc 233 the following indications are provided:

Capability	Agreement
Paging channel	no agreement was reached
DPCCH format	text in Tdoc 233 agreed (uplink M in both network and UE; downlink: formats related to a specific spreading factor shall be supported in case that spreading factor is supported by the UE physical layer capability class or by the network)
DL Tx antenna diversity (open loop and feedback mode)	text in Tdoc 233 agreed (optional in the network, mandatory in the UE, provided that the specifications are ready in time and that it is demonstrated the complexity increase in UE is acceptable)
Site selection diversity	text in Tdoc 233 agreed (optional in the network, mandatory in the UE, provided that the specifications are ready in time and that it is demonstrated the complexity increase in UE is acceptable)
Transport channel coding/multiplexing	text in Tdoc 233 agreed (this item is related to UE physical layer capability classes - the specification documents should avoid any ambiguity; WG1 should provide indications for the minimum spreading factor to be supported with single code transmission)
Downlink DTX	text in Tdoc 233 agreed (mandatory in both network and UE side)
Support of slotted mode	text in Tdoc 233 agreed (mandatory in both network and UE side for downlink; to be supported according to UE physical layer capability class in uplink)
Scrambling codes	text in Tdoc 233 agreed (mandatory in both network and UE side)
Random access codes	text in Tdoc 233 agreed (mandatory in both network and UE side)
Chip rates other than 4.096 Mchip/s	out of the scope of ad-hoc 11

In order to finalise the tables presented in Tdoc 180 it was proposed to held another ad-hoc session (possibly during WG1 #3 meeting; Thursday?)

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**Title** : Ad-hoc 11 Physical Layer capabilities report  
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## 1. Rationale

During the WG1 meeting #2 in Yokohama, concerns were raised by several operators that if parts of the physical layer specification are not mandatory (for example, items like downlink transmit diversity and site selection diversity for the UE) it could harm network performance and operation.

As an outcome of the discussion, the group identified the need to provide indications in the specifications documents whether a physical layer capability is mandatory or not (both in the UE and in the network side).

Within ad-hoc 11, several parties have issued different requirements. In Section 2, this document gives a summary of the requirements presented during the ad-hoc 11 discussion. Section 3 is dedicated to the collection of tables related to the items in the S1.xx specification documents, in order to identify if their implementation is service dependent or not and to indicate whether they are optional or mandatory.

## 2. Requirements

**From Tdoc. TSGW1#2(99)040 "UE PHYSICAL LAYER CAPABILITIES FOR UTRA (UMTS TERRESTRIAL RADIO ACCESS)" by TIM/CSELT, Vodafone, France Telecom, T-Mobil, Telia, Omnitel, Mannesmann Mobilfunk**

- 1) It is critical for operators to be able to plan and dimension a system with a clear view of what physical layer capabilities or features will be standard in the initial phase. It would be highly inefficient or even impossible to plan for a vast pool of UE optional physical layer capabilities. In a similar way, performance and roaming could be severely compromised if a terminal not supporting some features enters a network whose planning is based on "optional" features (for example, Tx antenna diversity and site selection diversity). In fact system planning and dimensioning have to be based on the 'worse case' MS and if the set of available options is too large the impact on the complexity of the planning phase as well as on the cost of the overall system would be unacceptable.
- 2) Features affecting layer 1 must be supported by ALL UE.

**From document "Principles for UE Capabilities" by NTT Docomo**

- 1) IMT-2000 terminals will be required same size and cost as that of the second-generation terminals.
- 2) The requirement of very small speech-service terminals that is highly competitive with the second generation is quite important.
- 3) Due to the short time scales for commercial service launch in Japan, only the technical proposals and descriptions that are defined in detail in the present can be specified.
- 4) Various improved techniques will be specified and commercialised additionally in the future, e.g. half-rate speech codec in the 2nd generation systems, thus it is essential to define classification of the terminals with phased approach.

**From document TSG T#2 (99) 057 "Draft Proposed WI for Terminal capabilities" by NEC Technologies**

- 1) It should be possible to produce UE's with different service capabilities, for example voice only UE's should be allowed as well as multimedia terminals.
- 2) When UE's provide compatible service capabilities (for example two UE's support voice) they should be assured of successful interworking.

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3) We do not burden UE with the need to support mandatory implementation capabilities that are not needed to support its target service capability.

**From Giovanni Romano's mail (March 9, 1999, subject: Re: Ad-hoc 11: physical layer capabilities - first draft")**

More in general, I would state the following principle:

different implementation options of the same (optional) feature would lead to incompatibility between UE and network; for example, if the network is providing feedback Tx antenna diversity and the UE supports only open loop Tx antenna diversity, the two entities will not be able to interwork successfully and exploit the Tx antenna diversity gain. This shall be avoided.

### 3. Way forward

Different requirements have been indicated during the discussion. Mainly there are two positions that can be summarised as:

- it should be possible to have terminals with different service capabilities; in particular, it should be possible to have simple terminals (small size and small cost);
- features and capabilities affecting layer 1 must be supported by all UE.

To finalise the work within ad-hoc 11 it is proposed to focus the activities on service independent capabilities, in order to identify the implementation capabilities that all UE implementations support.

Concerning service dependent capabilities, at this stage the following conclusion could be indicated:

When UE's provide compatible service capabilities (for example two UE's support voice) they should be assured of successful interworking. Moreover, different implementation options of the same (optional) feature would lead to incompatibility between UE and network. Therefore, this shall be avoided.

### 4. Report

Two classes of physical layer capabilities have been identified:

- service independent capabilities
- service dependent capabilities

In case of service independent capabilities, this report provides a table (see annex), whose rows are items taken from the S1.xx documents.

The table is organised as follows:

Capability FDD	Doc	Para	Proposal from ...		Proposal from ...		General Comments
			NE	UE	NE	UE	

NE stands for Network Equipment and UE stands for User Equipment (terminal). Under each column the indication M stands for mandatory, O stands for optional.

In the table, proposals from different companies are compared.

Note that NTT Docomo presented a proposal where the column on network side was not modified from report version 1; this column has been indicated under NTT Docomo in this report.

Some parties indicated that capabilities affecting physical layer performance should be mandatory in the terminal or removed from the specification documents. Other parties disagree with this approach and indicate that it should be possible to introduce features in a second phase of network operation or to allow different features to coexist.

No proposals have been presented on document S1.31.

A question was raised by Mr. Kato on the scrambling codes to be used in case of multiuser detection for the FDD component.

Where different proposals have been presented, the discussion is to be finalised during WG1 meeting #3.

### 5. Conclusions

In the ad-hoc group it was not possible to achieve a complete agreement on physical layer capabilities.

It was decided to split the report between service independent and service dependent capabilities. A table providing indications for service independent capabilities is given in this report.

It was not possible to achieve a complete agreement on service independent capabilities. Major differences are related to the implementation of capabilities in the terminal side. Issue like DL Tx antenna diversity, DTX, support of paging channel, site selection diversity require further clarifications.

## **6. Recommendations**

The group agreed the following recommendations to be forwarded to WG1 for approval:

### **Service independent capabilities**

- add a new section to S1.02 "UE capabilities" in order to indicate what has to be mandatory in the terminal

- add a section (or an indication within each section) whether an item described in the S1.xx documents is mandatory or not (both network and terminal side)

The text to be inserted in the S1.xx specification should be taken from the table in this report, once agreed by the meeting.

### **Service dependent capabilities**

It is recommended to include the following statement in S1.01 "General description":

When UE's provide compatible service capabilities (for example two UE's support voice) they should be assured of successful interworking. Moreover, different implementation options of the same (optional) feature would lead to incompatibility between UE and network. Therefore, this shall be avoided.

			Proposal from NTT DoCoMo		Proposal from Ericsson		Proposal from CSELT		Proposal from ...		General Comments
			NE	UE	NE	UE	NE	UE	NE	UE	
Capability FDD	Doc	Para									
<b>Transport channels</b>	S1.11	4									
FAUSCH	S1.11	4.1.2			O	O					Not in release 99 Philips: service dependent Proposal: remove
DCH	S1.11	4.1.1	M	M			M	M			
BCH	S1.11	4.2.1	M	M			M	M			
FACH	S1.11	4.2.2	M	M			M	M			
PCH	S1.11	4.2.3	M	<u>OM</u>			M	M			NTT DoCoMo and Philips indicate this item as service dependent If the paging channel is optional at the mobile, no mobile terminated calls are possible Proposal: M-M
RACH	S1.11	4.2.4	M	M			M	M			
DSCH	S1.11	4.2.5									Service dependent Proposal: remove from table
DSCH control	S1.11	4.2.6									Service dependent Proposal: remove from table
<b>Physical traffic channels</b>	S1.11	5									
Superframe format	S1.11	5.2.1, 5.3.1	M	M			M	M			
Frame format	S1.11	5.2.1, 5.3.1	M	M			M	M			
Slot format	S1.11	5.2.1, 5.3.1	M	M			M	M			
DPDCH format	S1.11	5.2.1, 5.3.1									Service dependent Proposal: remove from table
DPCCH format	S1.11	5.2.1, 5.3.1	M	M			M	M			
Pilot bit pattern	S1.11	5.2.1, 5.3.1	M	M			M	M			
TPC bit pattern	S1.11	5.2.1, 5.3.1	M	M			M	M			
<b>DL Tx antenna diversity Feedback mode</b>	S1.11	5.2.1, 5.3.1.1, 5.3.2.1.1	O	<u>YO</u> M	O	?	O	M			Samsung: service dependent – O Philips: mandatory for some classes of terminals
	S1.14	8									
<b>DL Tx antenna diversity Open loop</b>	S1.11	5.3.1.2	O	<u>YO</u> M	O	?	O	M			Samsung: service dependent (proposal M in UE)

			Proposal from NTT DoCoMo		Proposal from Ericsson		Proposal from CSELT		Proposal from ...		General Comments
			NE	UE	NE	UE	NE	UE	NE	UE	
Capability FDD	Doc	Para									
<b>Physical common channels</b>	S1.11	5									
RACH format	S1.11	5.2.2.1	M	M			M	M			
Primary Common Control Physical Channel (CCPCH) format	S1.11	5.3.2.1	M	M			M	M			
Secondary Common Control Physical Channel format	S1.11	5.3.2.2	M	M			M	M			
Synchronisation Channel format	S1.11	5.3.2.3	M	M			M	M			
Acquisition Indication Channel (AICH)	S1.11	5.3.2.6	M	<u>OM</u>			M	M			NTT DoCoMo indicates this item as service dependent From ad-hoc#3 discussion it seems that AICH is part of the random access mechanism Philips and Samsung: part of RACH - M Proposal: M-M
Physical Downlink Shared Channel format	S1.11	5.3.2.5									Service dependent Proposal: remove from table
Acquisition Indication Channel (AICH)	S1.11	5.3.2.6									Service dependent Proposal: remove from table
<b>Mapping of transport channels to physical channels</b>	S1.11	6	M	M			M	M			
<b>Timing relationship between physical channels</b>	S1.11	7									no input available



Capability FDD	Doc	Para	Proposal from NTT DoCoMo		Proposal from Ericsson		Proposal from CSELT		Proposal from ...		General Comments
			NE	UE	NE	UE	NE	UE	NE	UE	
<b>Transport channel coding/multiplexing</b>	S1.12	7.2	M	M (for registration) O(other services)(?) —question: do single service UEs have to support the complete scheme?	M	O	M	?			Service dependent Philips: support of basic scheme: M Proposal: remove from table
CRC calculation	S1.12	7.2.1	M	M (for registration) O(other services)			M	M			Service dependent Proposal: remove from table
Channel coding Convolutional cod	S1.12	7.2.2	M	M (for registration) O(other services)	M	M	M	M			Service dependent Proposal: remove from table
Channel coding Turbo coding	S1.12	7.2.2	M	M (for registration) O(other services)	M	O	M				Service dependent Proposal: remove from table
1 <sup>st</sup> interleaving	S1.12	7.2.3	M	M			M	M			Service dependent Proposal: remove from table
Rate matching	S1.12	7.2.4	M	M (for registration) O(other services)(?) —question: do single service UEs have to support the complete scheme?			M	?			Service dependent Proposal: remove from table
Rate matching algorithm	S1.12	7.2.4.1	M	M (for registration) O(other services)			M	M			Service dependent Proposal: remove from table
Downlink DTX	S1.12	7.2.5	M	QM			M	M			Service dependent It has impact on network capacity (voice activity factor) Proposal: M-M
Transport channel multiplexing	S1.12	7.2.6	M	M (for registration) O(other services)			M	M			Service dependent Proposal: remove from table
2 <sup>nd</sup> interleaver	S1.12	7.2.7	M	M (for registration) O(other services)			M	M			Ad-hoc 4: always present
Multirate transmission	S1.12	7.2.8		Q?							Service dependent No proposals for network side Proposal: remove from table
Rate detection	S1.12	7.2.9		M(for registration) O(other services)?							Service dependent No proposals for network side Proposal: remove from table
Coding procedure	S1.12	7.2.10		M(for registration) O(other services)?							Service dependent No proposals for network side Proposal: remove from table
Bit transmission sequence	S1.12	7.2.11	M	M			M	M			
<b>Coding of TFCI</b>	S1.12	7.3.1	M	M(for registration) O(other services)			M	M			Service dependent Proposal: remove from table
<b>Coding of slotted mode</b>	S1.12	7.4		Q?							Service dependent No proposals for network side Proposal: remove from table

			Proposal from NTT DoCoMo		Proposal from CSELT		Proposal from ...		
			NE	UE	NE	UE	NE	UE	
Capability FDD	Doc	Para	NE	UE	NE	UE	NE	UE	General Comments
<b>Uplink spreading and modulation</b>	S1.13	6							
Spreading	S1.13	6.2	M	M(for registration) O(other services) for the spreading factors to be supported by all UE O for multicode	M	M			S1.13 provides two figures basically illustrating two things: The way the spreading function is performed How to perform multicode transmission (this is service dependent)
Code generation and allocation	S1.13	6.3	M	M	M	M			
Channelization codes	S1.13	6.3.1	M	M	M	M			
Table 1: correspondence between symbol rate and spreading code types	S1.13	6.3.1		4.096 Mcps: M other chip rates: ? SF values in square brackets: ffs					M for 4.096 Mchip/s
Scrambling codes	S1.13	6.3.2	M	M(for registration) O(other services)	M	M			not clear: does it mean that there are no scrambling codes for "other service" terminals? I think scrambling codes are service independent (the same scheme is always adopted) Suggestion: M-M
Random access codes	S1.13	6.3.3	M	M(for registration) O(other services)	M	M			not clear: if RACH has to be supported by all terminals, then RACH codes are mandatory in the terminal. Suggestion: M-M
Modulation chip rate	S1.13	6.4.1		4.096 Mcps: M other chip rate: O?					M for 4.096 Mchip/s
Pulse shaping	S1.13	6.4.2	M	M	M	M			
Modulation	S1.13	6.4.3	M	M	M	M			
<b>Downlink spreading and modulation</b>	S1.13	7							
Spreading	S1.13	7.1	M	M(for registration) O(other services) for the spreading factors to be supported by all UE O for multicode	M	M			S1.13 provides two figures basically illustrating two things: The way the spreading function is performed How to perform multicode transmission
Code generation and allocation	S1.13	7.2	M	M	M	M			
Channelization codes	S1.13	7.2.1	M	M	M	M			
Scrambling codes	S1.13	7.2.2	M	M	M	M			
Synchronisation codes	S1.13	7.2.3	M	M	M	M			
Code allocation	S1.13	7.2.3.2	M	M	M	M			
Modulation chip rate	S1.13	7.3.1							M for 4.096 Mchip/s
Pulse shaping	S1.13	7.3.2	M		M	M			
Modulation	S1.13	7.3.3	M		M	M			

General comment: are chip rates other than 4.096 to be included in release 99?

			Proposal from NTT DoCoMo		Proposal from CSELT		Proposal from ...		General Comments
			NE	UE	NE	UE	NE	UE	
Capability FDD	Doc	Para							
<b>Cell search</b>	S1.14	4.1	M	M	M	M			
<b>Primary CCPCH synchronisation</b>	S1.14	4.2	M	M	M	M			
<b>Secondary CCPCH synchronisation</b>	S1.14	4.3	M	M	M	M			
<b>PRACH synchronisation</b>	S1.14	4.4	M	M	M	M			
<b>DPCCH/DPDCH synchronisation</b>	S1.14	4.5	M	M	M	M			
<b>Power control</b>	S1.14	5							
PRACH	S1.14	5.1.1	M	M	M	M			
Uplink DPCCH/DPDCH	S1.14	5.1.2	M	M	M	M			
Downlink primary CCPCH	S1.14	5.2.1	M	M	M	M			
Downlink secondary CCPCH	S1.14	5.2.2	M	M	M	M			
Downlink DPCCH/DPDCH	S.14	5.2.3	M	M	M	M			
Site selection diversity transmit power control	S.14	5.2.3.4	O	<del>OM</del>	O	M			NTT DoCoMo indicates this item as service dependent
<b>Random Access procedure</b>	S.14	6	M	M	M	M			
<b>Transmission stop and resumption control</b>	S1.14	7	M	<del>OM</del>	M	M			NTT DoCoMo indicates this item as service dependent
<b>Feedback mode transmit diversity</b>	S.14	8	O	<del>OM</del>	O	M			NTT DoCoMo indicates this item as service dependent
<b>Reverse link synchronous transmission</b>	S1.14	9	?	<del>O?</del>	?	?			NTT DoCoMo indicates this item as service dependent No proposal for the network side

	Doc	Para	Proposal from NTT DoCoMo		Proposal from CSELT		Proposal from ...		General Comments
			NE	UE	NE	UE	NE	UE	
Capability TDD	S1.21	6							
<b>Transport channels</b>	S1.21	6							
DCH	S1.21	6.1.1	M	M	M	M			
ODCH	S1.21	6.1.1	O	O	O	M			NTT DoCoMo indicates this item as service dependent Proposal: remove from table
BCH	S1.21	6.1.2	M	M	M	M			
PCH	S1.21	6.1.2	M	O	M	M			NTT DoCoMo indicates this item as service dependent If the paging channel is optional at the mobile, no mobile terminated calls are possible Proposal: M-M
FACH	S1.21	6.1.2	M	M	M	M			
RACH	S1.21	6.1.2	M	M	M	M			
ORACH	S1.21	6.1.2	O	O	O	M			NTT DoCoMo indicates this item as service dependent Proposal: remove from table
SCH	S1.21	6.1.2	M	M	M	M			
<b>Physical traffic channels</b>	S1.21	7							
Superframe format	S1.21	7	M	M	M	M			
Frame structure	S1.21	7.1	M	M	M	M			
Burst types	S1.21	7.2.2	M	M/O	M	M			NTT DoCoMo indicates this item as service dependent and proposes in the UE side: M(for registration) O(other services)
Transmission of TFCI	S1.21	7.2.2.1	f.f.s.	O	f.f.s.	f.f.s.			NTT DoCoMo indicates this item as service dependent No proposal for network side Remove form table?
Burst structure when using DTX	S1.21	7.2.2.3	f.f.s.	O	f.f.s.	f.f.s.			NTT DoCoMo indicates this item as service dependent No text in S1.21
Transmission of TPC	S1.21	7.2.2.4	f.f.s.	O	f.f.s.	f.f.s.			NTT DoCoMo indicates this item as service dependent No text in S1.21
Training sequences for spread bursts	S1.21	7.2.3	M	M/O	M	M			NTT DoCoMo indicates this item as service dependent (if there is a difference between registration and other services) and proposes for the UE M(for registration) O(other services) Training sequences are used to perform coherent demodulation, independently of the service Proposal: M-M
Midamble transmit power	S1.21	7.2.3.3	M	M/O	M	M			NTT DoCoMo indicates this item as service dependent (if there is a difference between registration and other services) and proposes for the UE M(for registration) O(other services)

			Proposal from NTT DoCoMo		Proposal from CSELT		Proposal from ...		General Comments
			NE	UE	NE	UE	NE	UE	
Capability TDD	Doc	Para							
<b>Common control physical channel (CCPCH)</b>	S1.21	7.3							
Downlink CCPCH spreading codes	S1.21	7.3.1.1	M	M	M	M			
Downlink CCPCH burst types	S1.21	7.3.1.2	M	M	M	M			
Downlink CCPCH training sequences for spread bursts	S1.21	7.3.1.3	M	M	M	M			
<b>Physical random access (PRACH)</b>	S1.21	7.3.2							
Spreading codes	S1.21	7.3.2.1	M	M	M	M			
Burst types	S1.21	7.3.2.2	M	M	M	M			
Training sequences for access bursts	S1.21	7.3.2.3	M	M	M	M			
<b>The physical synchronisation channel</b>	S1.21	7.4	M	M	M	M			
<b>Mapping of transport channels to physical channels</b>	S1.21	8	M	M	M	M			

Capability TDD	Doc	Para	Proposal from NTT DoCoMo		Proposal from CSELT		Proposal from ...		General Comments
			NE	UE	NE	UE	NE	UE	
<b>Transport channel coding/multiplexing</b>	S1.22	7.2	M	M/O	M				NTT DoCoMo indicates this item as service dependent (if there is a difference between registration and other services) and proposes for the UE M(for registration) O(other services) Service dependent Proposal: remove from table
CRC calculation	S1.22	7.2.1	M	M/O	M	M			NTT DoCoMo indicates this item as service dependent (if there is a difference between registration and other services) and proposes for the UE M(for registration) O(other services) Service dependent Proposal: remove from table
Channel coding	S1.22	7.2.2	M	M/O	M	M			NTT DoCoMo indicates this item as service dependent (if there is a difference between registration and other services) and proposes for the UE M(for registration) O(other services) Service dependent Proposal: remove from table
1 <sup>st</sup> interleaving	S1.22	7.2.3	M	M	M	M			Service dependent Proposal: remove from table
Rate matching	S1.22	7.2.4	M	M/O	M				NTT DoCoMo indicates this item as service dependent and proposes for the UE M(for registration) O(other services) Service dependent Proposal: remove from table
Rate matching algorithm	S1.22	7.2.4.1	M	M/O	M	M			NTT DoCoMo indicates this item as service dependent and proposes for the UE M(for registration) O(other services) Service dependent Proposal: remove from table
Transport channel multiplexing	S1.22	7.2.5	M	M/O	M	M			NTT DoCoMo indicates this item as service dependent and proposes for the UE M(for registration) O(other services) Service dependent Proposal: remove from table
2 <sup>nd</sup> interleaver	S1.22	7.2.6	M	M/O	M	M			NTT DoCoMo indicates this item as service dependent (if there is a difference between registration and other services) and proposes for the UE M(for registration) O(other services) Service dependent Proposal: remove from table
Downlink discontinuous transmission	S1.22	7.2.7	M	O	M	M			Service dependent It has impact on network capacity (voice activity factor) Proposal: M-M
Multirate transmission	S1.22	7.2.8	?	O	?	?			Service dependent Proposal: remove from table
Rate detection	S1.22	7.2.9	?	O	?	?			Service dependent Proposal: remove from table
<b>Automatic Repeat Request (ARQ)</b>	S1.22	7.3	?	O	?	?			Service dependent Proposal: remove from table
<b>Coding of TFCI</b>	S1.22	7.4.1	M	O	M	M			Service dependent Proposal: remove from table
<b>Slotted mode</b>	S1.22	7.5	?	O	?	?			Service dependent Proposal: remove from table Is it applicable to TDD?

			Proposal from NTT DoCoMo		Proposal from CSELT		Proposal from ...		General Comments
			NE	UE	NE	UE	NE	UE	
Capability TDD	Doc	Para							
<b>General</b>	S1.23	4							
Table 1: basic modulation parameters	S1.23	4							M for 4.096 Mchip/s
<b>Data modulation</b>	S1.23	5							
Symbol rate	S1.23	5.1	M	M	M	M			M for 4.096 Mchip/s
Mapping of bits onto signal point constellation	S1.23	5.2	M	M	M	M			
Pulse shape filtering	S1.23	5.3	M	M	M	M			
<b>Spreading modulation</b>	S1.23	6							
Basic spreading parameters	S1.23	6.1	M	M/O					Service dependent NTT Docomo proposes: M(for registration) O(other services) Proposal remove from table
Spreading codes	S1.23	6.2	M	M	M	M			
Scrambling codes	S1.23	6.3	M	M	M	M			
Spread and scrambled signal of data symbols and data blocks	S1.23	6.4	M	M	M	M			

General comment: are chip rates other than 4.096 to be included in release 99?  
Are other chip rates applicable to TDD?

			Proposal from NTT DoCoMo		Proposal from CSELT		Proposal from ...		General Comments
			NE	UE	NE	UE	NE	UE	
Capability TDD	Doc	Para	NE	UE	NE	UE	NE	UE	General Comments
<b>Synchronisation of TDD node Bs</b>	S1.24	6.2.1	M	M	M	M			
<b>Synchronisation of ODMA relays</b>	S1.24	6.2.2	?	O	?	?			NTT Docomo indicates this as service dependent Proposal: remove from table
<b>Channel allocation</b>	S1.24	6.3	M	O	M	M			NTT Docomo indicates this as service dependent This is related to resource management
<b>Power control</b>	S1.24	6.4	M	M/O	M	M			NTT Docomo indicates this as service dependent and proposes for UE M(for registration) O(other services) If power control in TDD has a similar function as in FDD, it impacts on system performance Proposal: M-M
<b>Timing advance</b>	S1.24	6.5	M	O	M	M			NTT Docomo indicates this as service dependent
<b>Synchronisation and cell search procedures</b>	S1.24	6.6	M	M	M	M			
<b>ODMA relay probing</b>	S1.24	6.7		O					NTT Docomo indicates this as service dependent Proposal: remove from table
<b>Idling operation</b>	S1.24	6.8	f.f.s.	O	f.f.s.	f.f.s.			NTT Docomo indicates this as service dependent Proposal: remove from table
<b>Discontinuous transmission (DTX) of radio frames</b>	S1.24	6.10	f.f.s.	O	f.f.s.	f.f.s.			NTT Docomo indicates this as service dependent Proposal: remove from table
<b>Forward link transmit diversity</b>	S1.24	6.11	O	O	O	M			NTT Docomo indicates this as service dependent