Technical Specification Group, Radio Access Network
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Title: Radio Interface Specifications for IMT-2000

Document for: Approval

Agenda Item: **?**

The text in the Annex is a proposed contribution to be submitted to the 17th Meeting of ITU-R Task Group 8/1 (Beijing, May 31 to June 11) by an Individual Member. Please note that it is also intended that this document will be presented to the Joint Experts Group meeting between ITU-R Task Group 8/1 and ITU-T Study Group 11.

Task Group 8/1 is defining the Recommendations for International Mobile Telecommunications 2000 (IMT-2000). Task Group 8/1 is expected to complete its work with the finalisation of the Recommendation on "Detailed Specifications of the Radio Interfaces of IMT-2000 (IMT.RSPC)". The meeting to be held in Beijing is an important intermediate step in this process and will set the direction of the work for the final TG8/1 meeting to be held in Helsinki, October 25 to November 5, 1999.

The liaison sent from TG8/1 to different SDOs, Partnership Projects, and RTT proponents, gives a unique opportunity for 3GPP to facilitate the work of Task Group 8/1. The timing is very well suited since the 3GPP workplan is to approve a draft specification at this TSG RAN#3 meeting. It is very important that the draft specification resulting from the intense 3GPP activity is submitted to the TG8/1 meeting.

This contribution provides the response to the liaison sent from TG8/1 to 3GPP and in addition includes the draft radio interface specifications structure for UTRA as an example to facilitate the development of the IMT-2000 Radio Interface Recommendation IMT.RSPC.

The contribution proposes that the 3GPP structure for the radio interface specifications be adopted for direct inclusion into ITU-R's Preliminary Draft New Recommendation "Detailed Specifications of the Radio Interfaces of IMT-2000 (IMT.RSPC)", as a dedicated section dealing with UTRA.

3GPP is encouraged to support the work of ITU-R Task Group 8/1 by providing as much specification material as possible, perhaps extending to the scopes and even detailed content of the specification items included here.

ANNEX

[ITU MEMBER][1]

RADIO INTERFACE SPECIFICATIONS FOR IMT-2000

1 INTRODUCTION

This document provides a response to the liaison statement sent from ITU-R TG8/1 to SDOs, Partnership Projects, and radio interface proponents on the topic of radio interface specifications. It contains information about the approved draft radio interface specifications for UTRA, developed by 3GPP TSG RAN. These specifications are submitted to ITU-R Task Group 8/1 to facilitate the development of the Preliminary Draft New Recommendation "Detailed Specifications of Radio Interfaces of IMT-2000 (IMT.RSPC)".

It is recognised that not all specifications listed in this document may be relevant to ITU-R TG 8/1. However, 3GPP TSG RAN is developing a complete set of Specifications for the Radio Access Network. It includes signalling protocols between nodes located at the network side as well as signalling over the radio interface, and believes it would be of assistance to TG8/1 during the discussions of the RSPC structure. Specifically, the S1, S2 and S4 sets of specifications should be relevant for TG8/1 since they describe the physical layers up to the radio resource management layer which are seen as radio technology dependent parts.

The purpose of the contribution is to indicate the structure and content that 3GPP is using to develop its specifications for the radio interface, which has now been accepted by SDOs in all 3 regions.

In Appendix A the 3GPP RAN TSG specification structure is shown.

In Appendix B the approved draft specifications named S1, S2 and S4 can be found. These specifications show the present detailed level and status of the work performed in 3GPP RAN TSG. It is proposed that this structure is adopted for direct inclusion into a dedicated section on UTRA in the Preliminary Draft New Recommendation "Detailed Specifications of Radio Interfaces of IMT-2000 (IMT.RSPC)", with incorporation of material to an appropriate level of detail to be determined by ITU-R Task Group 8/1.

The current thinking within 3GPP is that the complete radio interface from L3RR to physical layer should be handled in TG8/1.

[1] This contribution was developed in 3GPP TSG RAN

2 RESPONSE FROM 3GPP TO THE LIAISON FROM TG8/1

2.1 REQUEST FOR INFORMATION ON RADIO INTERFACES

In the TG8/1 document *8-1/TEMP/176-E "LIAISON STATEMENT TO SDOs, PARTNERSHIP PROJECTS, AND RADIO INTERFACE PROPONENTS"*, TG8/1 asks for the following information from 3GPP on its radio interface development:

- *"radio interface information in a format similar to that in the draft RSPC structure document (see Attachment 1)";*

Response: See the specification structure in general in Appendix A that is rather well suited for inclusion in the attachment 1 "structure of RSPC".

- *"a high level summary of the radio interface including explanation of the specification structure";*

Response: See S1.01 Physical layer – general description for an overview of, and introduction to, the physical layer; and S2.01 Radio Interface Protocol Architecture which contains a general description of L2 and L3 protocols.

- *"a table of contents of their radio interface specification structure";*

Response: See Appendix A.

- *"sufficient reference pointers to more detailed material (e.g. document, section, paragraph)".*

Response: See Appendix B.

2.2 REQUEST FOR COMMENTS ON INCORPORATION OF EXTERNALLY DEVELOPED MATERIAL

In the TG8/1 document *8-1/TEMP/176-E "LIAISON STATEMENT TO SDOs, PARTNERSHIP PROJECTS, AND RADIO INTERFACE PROPONENTS"*, TG8/1 asks for comments on the following topics from 3GPP.

"ITU-R is considering the use of "references to" or "direct incorporation of" external material in Recommendation ITU-R M.[IMT-RSPC]. TG 8/1 seeks guidance from the external organizations on the following issues. The response should address both approaches ("references to" and "direct incorporation of"):

- *"approval of an ITU-R Recommendation incorporating externally developed and maintained specifications";*

Response: RAN TSG is not aware of any problem concerning the approval of an ITU-R Recommendation incorporating externally developed and maintained specifications. If specifications are incorporated completely and directly into an ITU-R Recommendation, this Recommendation will have to be updated regularly, typically around once a year. It is

therefore better to use either a direct reference to where the detailed material can be found or use a general introduction describing the radio interface, its structure and how further detailed information can be found (e.g. a reference).

- *"copyright and licensing aspects of non-ITU specifications, including ownership and change authority";*

Response: Since 3GPP is not a legal entity such a question can not be answered by 3GPP but rather by the Partner Organisations that have signed the Partnership Agreement. The Partners have a meeting planned for May 27-28 and this question will be forwarded to that meeting from the RAN TSG.

- *"publication and distribution aspects";*

Response: Since 3GPP is not a legal entity such a question can not be answered by 3GPP but rather by the Partner Organisations that have signed the Partnership Agreement. The Partners have a meeting planned for May 27-28 and this question will be forwarded to that meeting from the RAN TSG.

- *"maintenance of the RSPC Recommendation, including frequency of updates, version control and approval procedures";*

Response: See answer on the first question above. It is expected that during the first year after the specifications are approved, i.e. during the year 2000, that there will be quite a lot of change requests since the first implementations will be made during that time period. This is based on the experience from GSM. It is believed that the RF parts of the specifications will be the most stable ones and change very little after they are settled. The protocol messages and bit allocations could require more updates, at least in the beginning. An approach with a descriptive part including essential parameters of RF and base band including references to where to find the detailed specifications including message structures and protocols will not require too many updates of RSPC. This will provide sufficient information for world-wide compatibility and operation of equipment as being required in [IMT.RSPC]

- *"comments on the respective advantages/disadvantages of each approach";*

Response: RAN TSG does not identify any reason for a direct incorporation of text into RSPC. Advantages of the use of references are outlined above.

- *"other comments relevant to the development of RSPC".*

Response: The RAN TSG makes the following comments and proposals to the development of the RSPC in TG8/1:

1. That the ITU's Preliminary Draft New Recommendation "Detailed Specifications of the Radio Interfaces of IMT-2000 (IMT.RSPC)" should complement, not subsume, standards developed by external SDOs and partnership projects. RSPC should incorporate appropriate SDO and partnership project material. RAN TSG thinks that

the structure of RSPC identified in Attachment 1 of the received liaison is in line with this approach.

2. That radio interface specifications based on material developed by the SDOs would seem to offer the best opportunity for the ITU. This would enable successful and timely completion of [IMT.RSPC], bearing in mind the considerable amount of detailed specification already undertaken within the SDOs and partnership projects, the ambitious time scales for completion of RSPC, the availability of expert resources and the intention of some countries to deploy IMT-2000 by 2001.

3. That Task Group 8/1 is encouraged to review and adopt the 3GPP RAN TSG radio interface specification structure for direct inclusion (preferably by reference) into a dedicated section of Preliminary Draft New Recommendation "Detailed Specifications of the Radio Interfaces of IMT-2000 (IMT.RSPC)", in line with the structure contained in Attachment 1 of the received liaison.

APPENDIX A

RADIO INTERFACE SPECIFICATIONS STRUCTURE

[Note: It may be advantageous to also include the Scope of each Specification]

S1

S1.01 Physical layer – general description

S1.02 UE capabilities

S1.11 Transport channels and physical channels (FDD)

S1.12 Multiplexing and channel coding (FDD)

S1.13 Spreading and modulation (FDD)

S1.14 Physical layer procedures (FDD)

S1.21 Transport channels and physical channels (TDD)

S1.22 Multiplexing and channel coding (TDD)

S1.23 Spreading and modulation (TDD)

S1.24 Physical layer procedures (TDD)

S1.31 Measurements

S2

S2.01 Radio Interface Protocol Architecture

S2.02 Services provided by the Physical Layer

S2.03 UE functions and Interlayer Procedures in Connected Mode

S2.04 UE functions related to Idle Mode

S2.21 Medium Access Control (MAC) Protocol Specification

S2.22 Radio Link Control (RLC) Protocol Specification

S2.31 Radio Resource Control (RRC) Protocol Specification

S3

S3.01 (UT)RAN Overall Description

S3.10 Iu Interface: General Aspects and Principles

S3.11 Iu interface Layer 1

S3.12 Iu interface signalling transport

S3.13 Iu interface RANAP signalling

S3.14 Iu interface data transport & transport signalling

S3.15 Iu interface CN-RAN user plane protocols

S3.20 Iur Interface: General Aspects and Principles

S3.21 Iur interface Layer 1

S3.22 Iur interface signalling transport

S3.23 Iur interface RNSAP signalling

S3.24 Iur interface data transport & transport signalling for CCH data streams

S3.25 Iur interface user plane protocols for CCH data streams

S3.26 Iur & Iub interface data transport & transport signalling for DCH data streams

S3.27 Iur & Iub interface user plane protocol for DCH data streams

S3.30 Iub Interface: General Aspects and Principles

S3.31 Iub interface Layer 1

S3.32 Iub interface signalling transport

S3.33 Iub interface RBAP signalling

S3.34 Iub interface data transport & transport signalling for CCH data streams

S3.35 Iub interface user plane protocols for CCH data streams

S4

S4.01A Radio transmission and reception UE FDD

S4.01B Radio transmission and reception BS FDD

S4.02A Radio transmission and reception UE TDD

S4.02B Radio transmission and reception BS TDD

S4.03 RF parameters in support of Radio Resource Management

S4.11 Basestation conformance testing FDD

S4.12 Basestation conformance testing TDD

S4.13 Basestation EMC[2]

[2] This Specification does not include the antenna port immunity and emissions.

APPENDIX B

DRAFT RADIO INTERFACE SPECIFICATIONS

The S1, S2, and S4 draft specifications as developed within the 3GPP RAN TSG and [some of them] approved in the RAN TSG#3 meeting.

[www.3gpp.org/Documents/TSG_RAN/TSG_RAN/TSGR_03/Docs/pdfs

S1 docs: xxx, yyy, zzzzzzzzzz….

S2 docs: xxx, yyy, zzzzzzzzzz….

S4 docs: xxx, yyy, zzzzzzzzzz….]