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Contents

Foreword

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1 Scope

This document is a technical report of the UMTS1700 work items. The purpose of these work items is to provide UMTS specification support for UTRA/FDD in the 1700 MHz only in Japan. In addition to the schedule and status of the work items, the report includes a description of the motivation, requirements, study results and specification recommendations.

This document is a 'living' document, periodically updated and presented at all TSG-RAN meetings until all related CRs are agreed and approved.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

    [1] RP-050385 "Work Item proposal for 1700 MHz band in Japan", RAN#28

    [2] R4-050620 "Technical conditions applied for UMTS1700 in Japan", RAN4#36

    [3] R4-050623 "Work plan proposal of the WI "UMTS1700"", RAN4#36

    [4] R4-050805 "UMTS1700-PHS Co-existence Simulation Results", RAN4#36

    [5] R4-051405 "Introduction of UMTS1700 requirements" (TS25.101 Rel-7), RAN4#37

    [6] R4-051261 "Introduction of UMTS1700 requirements" (TS25.104 Rel-7), RAN4#37

    [7] R4-051391 "Introduction of UMTS1700 requirements" (TS25.141 Rel-7), RAN4#37

    [8] R4-051263 "Introduction of UMTS1700 requirements" (TS25.133 Rel-7), RAN4#37

    [9] R4-051264 "Introduction of UMTS1700 requirements" (TS25.113 Rel-7), RAN4#37

    [10] R4-051265 "Introduction of UMTS1700 requirements" (TS34.124 Rel-7), RAN4#37

    [11] R2-052713-052716 "Introduction of UMTS1700" (TS25.307 R99-Rel-6), RAN2#49

    [12] R2-053048 "Introduction of UMTS1700" (TS25.331 Rel-6), RAN2#49

    [13] R3-051362 "Introduction of UMTS1700" (TS25.461 Rel-7), RAN3#49

    [14] R3-051292 "Introduction of UMTS1700 requirements" (TS25.463 Rel-7), RAN3#49

    [15] R5-052329 "Introduction of UMTS1700 for 34.108" (TS34.108 Rel-6), RAN5#29

    [16] R5-052334 "Introduction of UMTS1700 for 34.121" (TS34.121 Rel-6), RAN5#29

3 Definitions, symbols and abbreviations

3.1 Definitions

3.2 Symbols

3.3 Abbreviations

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

W-CDMA	Wideband Code Division Multiple Access, a type of cellular system meeting ITU-2000 requirement
UMTS	Universal Mobile Telecommunications System, often used synonymously with WCDMA
PHS	Personal Handyphone System
UE	User Equipment, also cellular terminal
BS	Cellular system base station
UL	Uplink, the RF path from UE to BS
DL	Downlink, the RF path from BS to UE
TX	Transmitter
RX	Receiver

4 Introduction

A working group has been established under the national telecommunication council in Japan to consider the technical condition of the frequency re-arrangement in 1700 MHz band in order to enhance frequency efficiency. Therefore, the proponents of this work item believe that there is high possibility that IMT-2000 would be introduced in Japan in the band near future.

It is suggested that the consideration of the evolution and migration to introduce DS-CDMA in the 1700 MHz band being studied in the working group under the national telecommunication council in Japan could be used as the basis for this work, which would reduce the effort required within 3GPP.

4.1 Task Description

The purpose of this work item is to study of UMTS1700 for a potential deployment only in Japan. The study includes co-existing studies with the following technologies: ARIB STD-28 (PHS), taking the frequency band expansion in Japan into account.

The Work Item description for UMTS in 1700 MHz band was approved at TSG-RANP#28 [1].

4.2 Rationale for DS-CDMA1700 (UMTS1700)

This WI enables the introduction of W-CDMA radio interface to the 1749.9-1784.9MHz (UL) and 1844.9-1879.9 MHz(DL) band.

5 Requirements

5.1 Deployment Scenarios

Outline of new frequency arrangement discussed in Information and Communications Council of Japan is provided in [2].

5.2 Co-existence with other technologies

5.2.1 Co-existence with PHS

Technical condition of UE reference sensitivity level discussed in Information and Communications Council of Japan is provided in [2].

Supportive material ("Simulation results of interference analysis with PHS band") is provided in [4].

5.3 UE reference sensitivity level

5.3.1 Minimum requirement

Technical condition of UE reference sensitivity level discussed in Information and Communications Council of Japan is provided in [2].

5.4 Harmonization of Band III specifications

Technical condition of UE reference sensitivity level discussed in Information and Communications Council of Japan is provided in [2]. The reference sensitivity requirement of UMTS1700 is set as DPCH_Ec = -116dBm/3.84MHz which is lower by 2dB compared to that of Band III.

The following note is added to Table7.2 in TS25.101:

"For the UE which suports both Band III and Band IX operating frequencies, the reference sensitivity level of -114.5 dBm DPCH_Ec <REFSENS> shall apply for Band IX. The corresponding <REFÎ$_{or}$> is -104.2 dBm."

6 Methodology used in this technical report

- ARIB provided the following technical conditions and RAN-WG4 checked them.

    - Frequency arrangement

    - UE reference sensitivity level

    - Requirements for co-existence with other technologies in Japan

    - Necessary changes for the relevant specifications based on the information above.

- Study and check necessary changes for the relevant specifications and collect appropriate information into a TR.

- Generate CRs to update the appropriate specifications and other documents.

- Study any signalling issues related to UMTS1700.

- Study conformance test specification for FDD UE and other documents.

7 Study Areas

Technical conditions of UE reference sensitivity level and spurious emissions requirements discussed in Information and Communications Council of Japan is provided in [2].

8 Summary of prior contributions to set requirements for change requests

8.1 UMTS1700 UE

Table 8.1.1 summarises changes required for TS25.101 [5].

Table 8.1.1: Summary of Changes required for TS25.101 and their status

Clause	Description	CR Status	Description of change
3	Definitions	No change is proposed.	
5.2	Frequency band	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Add a new row for Band IX.
5.3	TX-RX frequency separation	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Add a new row for Band IX.
5.4.2	Channel raster	No change is proposed.	
5.4.3	Channel number	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Additional channel numbers are not defined.
5.4.4	UARFCN	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Add channel numbering for Band IX.
6.2.1	Maximum Power	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Add requirement for Band IX which is same for Band I.
6.6.2.1.1	Spectrum emission Mask	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Add requirement for Band IX which is same for Band I.
6.6.3.1	Tx Spurious	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Add requirement for Band IX.
7.3	Reference sensitivity	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	**Add requirement for Band IX.**
7.6.1	In band blocking	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Add requirement for Band IX.
7.6.2	Out of band blocking	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Add requirement for Band IX.
7.6.3	Narrow band blocking	No change is proposed.	
7.7	Spurious response	No change is proposed.	
7.8.1	Intermodulation	No change is proposed.	
7.8.2	Narrowband intermodulation	No change is proposed.	
7.9	Rx spurious emission	Proposed at RAN4#37 as CR0469r1 in Tdoc.R4-051405.	Add requirement for Band IX.

Table 8.1.2 summarises changes required for TS34.121 [16].

Table 8.1.2: Summary of Changes required for TS34.121 and their status

Clause	Description	CR Status	Description of change
3	Definitions	No change is proposed.	
4.2	Frequency band	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add a new row for Band IX.
4.3	TX-R X frequency separation	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add a new row for Band IX.
4.4.2	Channel raster	No change is proposed.	
4.4.3	Channel number	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Additional channel numbers are not defined.
4.4.4	UARFCN	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add channel numbering for Band IX.
5.2	Maximum Power	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add requirement for Band IX which is same for Band I.
5.4	Output Power Dynamics in the Uplink	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add test parameters for Band IX.
5.5	Transmit ON/OFF Power	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add test parameters for Band IX.
5.9	Spectrum emission Mask	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add requirement for Band IX which is same for Band I.
5.9A	Spectrum emission Mask with HS-DPCCH	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add requirement for Band IX which is same for Band I.
5.11.2	Tx Spurious	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add requirements for Band IX.
6.2	Reference sensitivity	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add requirement for Band IX.
6.5.2.1	In band blocking	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add requirement for Band IX.
6.5.2.2	Out of band blocking	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add requirement for Band IX.
6.5.2.3	Narrow band blocking	No change is proposed.	
6.6	Spurious response	No change is proposed.	
6.7	Intermodulation	No change is proposed.	
	Narrowband intermodulation	No change is proposed.	
6.8	Rx spurious emission	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add requirement for Band IX.
8.7	Measurement Performance for UE	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add requirement for Band IX.
Annex D	Propagation conditions	Proposed at RAN5#29 as a CR0626 in Tdoc.R5-052334.	Add conditions for Band IX.

Table 8.1.3 summarises changes required for TS34.108 [15].

Table 8.1.3: Summary of Changes required for TS34.108 and their status

Clause	Description	CR Status	Description of change
5.1.1	FDD Mode Test frequencies	Proposed at RAN5#29 as a CR0466 in Tdoc.R5-052329.	Add new reference test frequencies for Band IX.

Table 8.1.4 summarises changes required for TS34.124 [10].

Table 8.1.4: Summary of Changes required for TS34.124 and their status

Clause	Description	CR Status	Description of change
4.4	Receiver exclusion band	Proposed at RAN4#37 as CR0021 in Tdoc.R4-051265.	Add a new line for Band IX.

8.2   UMTS1700 BS

Table 8.2.1 summarises changes required for TS25.104 [6].

Table 8.2.1 - Summary of Changes required for TS25.104 and their status

Clause	Description	CR Status	Description of change
5.2	Frequency band	Proposed at RAN4#37 as CR0268 in Tdoc.R4-051261.	Add a new row for Band IX.
5.3	TX-RX frequency separation	Proposed at RAN4#37 as CR0268 in Tdoc.R4-051261.	Add a new row for Band IX.
5.4.2	Channel raster	No change is proposed.	
5.4.3	Channel number	Proposed at RAN4#37 as CR0268 in Tdoc.R4-051261.	Additional channel numbers are not defined.
6.6.2.1	Emission mask	No change is proposed.	
6.6.3.1	Tx Spurious emissions	No change is proposed.	
6.6.3.2	Protection of BS receiver	Proposed at RAN4#37 as CR0268 in Tdoc.R4-051261.	Add requirement for Band IX which is same for Band I.
6.6.3.3- 6.6.3.7	Co-existence requirements	Proposed at RAN4#37 as CR0268 in Tdoc.R4-051261.	Add requirement for Band IX.
7.5	Blocking	Proposed at RAN4#37 as CR0268 in Tdoc.R4-051261.	Add requirement for Band IX which is same for Band I.
7.6	Intermodulation characteristics	Proposed at RAN4#37 as CR0268 in Tdoc.R4-051261.	Add requirement for Band IX which is same for Band I.
7.7	Rx spurious emission	Proposed at RAN4#37 as CR0268 in Tdoc.R4-051261.	Add requirement for Band IX.

Table 8.2.2 summarises changes required for TS25.141 [7].

Table 8.2.2: Summary of Changes required for TS25.141 and their status

Clause	Description	CR Status	Description of change
3.4.1	Frequency band	Proposed at RAN4#37 as CR0418 in Tdoc.R4-051391.	Add a new row for Band IX.
3.4.2	TX-RX frequency separation	Proposed at RAN4#37 as CR0418 in Tdoc.R4-051391.	Add a new row for Band IX.
3.5.2	Channel raster	No change is proposed.	
3.5.3	Channel number	Proposed at RAN4#37 as CR0418 in Tdoc.R4-051391.	Additional channel numbers are not defined.
6.5.2.1	Emission mask	No change is proposed.	
6.5.2.1	Tx Spurious emissions	No change is proposed.	
6.5.3.4.3	Protection of BS receiver	Proposed at RAN4#37 as CR0418 in Tdoc.R4-051391.	Add requirement for Band IX which is same for Band I.
6.6.3.4.4 - 6.6.3.7	Co-existence requirements	Proposed at RAN4#37 as CR0418 in Tdoc.R4-051391.	Add requirement for Band IX.
7.5	Blocking	Proposed at RAN4#37 as CR0418 in Tdoc.R4-051391.	Add requirement for Band IX which is same for Band I.
7.6	Intermodulation characteristics	Proposed at RAN4#37 as CR0418 in Tdoc.R4-051391.	Add requirement for Band IX which is same for Band I.
7.7	Rx spurious emission	Proposed at RAN4#37 as CR0418 in Tdoc.R4-051391.	Add requirement for Band IX.
Annex D	Propagation conditions	Proposed at RAN4#37 as CR0418 in Tdoc.R4-051391.	Add conditions for Band IX.

Table 8.2.3 summarises changes required for TS25.113 [9].

Table 8.2.3: Summary of Changes required for TS25.113 and their status

Clause	Description	CR Status	Description of change
4.5.2	Receiver exclusion band	Proposed at RAN4#37 as CR0032 in Tdoc.R4-051264.	Add a new line for Band IX.

8.3 Radio Resource Management

Table 8.3.1 summarises changes required for TS25.133 [8].

Table 8.3.1: Summary of Changes required for TS25.133 and their status

Clause	Description	CR Status	Description of change
9.1	Measurement Performance for UE	Proposed at RAN4#37 as CR0819 in Tdoc.R4-051263.	Add requirement for Band IX.
A9.1	Measurement Performance for UE (Normative Annex for Test cases)	Proposed at RAN4#37 as CR0819 in Tdoc.R4-051263.	Add requirement for Band IX.

8.4 Requirements on UEs supporting a release-independent frequency band

Table 8.4.1 summarises changes required for TS25.307 [11].

Table 8.4.1: Summary of Changes required for TS25.307 (Rel.99/4/5/6) and their status

Clause	Description	CR Status	Description of change
X.1.1	RF requirements	Proposed at RAN2#49 as CR31 through 34 in Tdoc.R2-052713 through R2-052716.	A new section for Band IX.
X.1.2	Signalling Requirements	Proposed at RAN2#49 as CR31 through 34 in Tdoc.R2-052713 through R2-052716.	A new section for Band IX.

8.5 Radio Resource Control (RRC) protocol

Table 8.3.1 summarises changes required for TS25.331 [12].

Table 8.3.1: Summary of Changes required for TS25.331 and their status

Clause	Description	CR Status	Description of change
8.1.1.6.5	System Information Block type 5 and 5bis	Proposed at RAN2#49 as CR2617r2 in Tdoc.R2-053048.	The IE "Frequency band indicator" is added to System Information type 5..
10.3.3.21a	Measurement capability extension	Proposed at RAN2#49 as CR2617r2 in Tdoc.R2-053048.	A new reference for the FDD Frequency band (Band IX).
10.3.3.42a	UE radio access capability extension	Proposed at RAN2#49 as CR2617r2 in Tdoc.R2-053048.	A new reference for the Frequency band (Band IX).
10.3.6.35c	Frequency band indicator 2	Proposed at RAN2#49 as CR2617r2 in Tdoc.R2-053048.	Semantics description is changed.

8.6 UTRAN Iuant interface

Table 8.6.1 summarises changes required for TS25.461 [13].

Table 8.6.1: Summary of Changes required for TS25.461 and their status

Clause	Description	CR Status	Description of change
4.3.7	Operating bands	Proposed at RAN3#49 as CR0032 in Tdoc.R3-051362.	Add a new line for Band IX.

Table 8.6.2 summarises changes required for TS25.463 [14].

Table 8.6.2: Summary of Changes required for TS25.463 and their status

Clause	Description	CR Status	Description of change
Annex B	Assigned fields for additional data	Proposed at RAN3#49 as CR0056 in Tdoc.R3-051292.	Define new bit fields for Band IX.

9 Project Plan

9.1 Schedule

Table 9.1.1 summarises the schedule plan for UMTS1700.

Table 9.1.1: Schedule plan [3]

Item#	Effort Required	Responsibility	Schedule
1	Provide deployment scenarios for 1700 MHz DS-CDMA in Japan	ARIB[1]	R4#36
2	Provide requirements for co-existence with other technologies in Japan	ARIB[1]	R4#36
3	Propose necessary changes for the relevant specifications based on the information provided in #2.	ARIB[2]	R4#36
4.1	Study and check necessary changes for the relevant specifications and collect appropriate information into a TR	RAN4	R4#36 – R4#37
4.2	Generate CRs to update the appropriate specifications and other documents.	RAN4	R4#36 – R4#37
5	Study any signalling issues related to DS-CDMA at 1700 MHz	RAN2	R2#49
6	Study regarding conformance test specification for FDD UE and other documents	RAN5	R5#29

Note 1:   ARIB provides RAN4 outcomes from the national Information and Communications council of Japan.

Note 2   Individual member of ARIB may provide appropriate information or proposals based on studies at the national telecommunication council of Japan.

9.2 Work Task Status

Table 9.2.1 summarises the work task status for UMTS1700.

Table 9.2.1: Work task status

Item#	Effort Required	Responsibility	Status
1	Provide deployment scenarios for 1700 MHz DS-CDMA in Japan	ARIB*1	Completed
2	Provide requirements for co-existence with other technologies in Japan	ARIB*1	Completed
3	Propose necessary changes for the relevant specifications based on the information provided in #2.	ARIB*2	Completed
4.1	Study and check necessary changes for the relevant specifications and collect appropriate information into a TR	RAN4	Completed
4.2	Generate CRs to update the appropriate specifications and other documents.	RAN4	Completed
5	Study any signalling issues related to DS-CDMA at 1700 MHz	RAN2	Completed
6	Study regarding conformance test specification for FDD UE and other documents	RAN5	Completed

Note 1   ARIB provides RAN4 outcomes from the national Information and Communications council of Japan.

Note 2:   Individual member of ARIB may provide appropriate information or proposals based on studies at the national telecommunication council of Japan.

10 Open Issues

None.

Annex A:
Change History

Document history		
[V 0.0.0]	[2005-08]	First draft.
[V 0.1.0]	[2005-08]	Update based on approved input documents in TSG RAN WG4 meeting #36
[V 1.1.0]	[2005-11]	Update based on approved input documents in TSG RAN WG4 meeting #37
[V 2.0.0]	[2005-11]	Update based on approved input documents in RAN2#49, RAN3#49, RAN4#37, and RAN5#29
V7.0.0	2005-12	Approved and put under change control at RAN #30