WirelessMAN-Advanced System

ARIB STANDARD

ARIB STD-T105 Ver. 1.30

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Association of Radio Industries and Businesses (ARIB)

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1. Introduction

Association of Radio Industries and Businesses (hereinafter ARIB) investigates and summarizes the basic technical requirements for various radio systems in the form of "technical standard (ARIB STD)". These standards are being developed with the participation of, and through discussions amongst various radio equipment manufacturers, operators and users.

ARIB standards include "government technical standards" (mandatory standards) that are set for the purpose of encouraging effective use of frequency resources and preventing interference, and "private technical standards" (voluntary standards) that are defined in order to guarantee compatibility between radio facilities, to secure adequate transmission quality as well as to offer greater convenience to radio equipment manufacturers and users, etc.

This ARIB standard is developed to transpose the Global Core Specification of the "WirelessMAN-Advanced" provided by the IEEE and to prepare a foundation of introducing the terrestrial radio interface of International Mobile Telecommunications-Advanced (IMT-Advanced), which is specified by the ITU, in Japan in near future.

Note: Since the national regulatory requirements applicable to the IMT-Advanced radio system have not yet been set forth, this ARIB standard shall not practically be used for manufacturing, installation and operation of the WirelessMAN-Advanced System in Japan. It is therefore anticipated that this standard will be revised in response to the implementation of the relevant national regulations.

2. Industrial Property Rights (IPRs)

Although this ARIB Standard contains no specific reference to any Essential Industrial Property Rights relating thereto, the holders of such Essential Industrial Property Rights state to the effect that the rights listed in Attachment 1 and 2, which are the Industrial Property Rights relating to this standard, are held by the parties also listed therein, and that to the users of this standard, in the case of Attachment 1 (selection of option 1), such holders shall not assert any rights and shall unconditionally grant a license to practice such Industrial Property Rights contained therein, and in the case of Attachment 2 (selection of option 2), the holders shall grant, under the reasonable terms and conditions, a non-exclusive and non-discriminatory license to practice the Industrial Property Rights contained therein. However, this does not apply to anyone who uses this ARIB Standard and also owns and lays claim to any other Essential Industrial Property Rights of which is covered in whole or part in the contents of provisions of this ARIB Standard.

The lists of Essential Industrial Property Rights (IPRs) are shown in the following Attachments.

Attachment 1	List of Essential Industrial Property Rights (selection of option 1)
Attachment 2	List of Essential Industrial Property Rights (selection of option 2)
Reference	This is the list of Essential Industrial Property Rights (IPRs) filed or applied to countries other than Japan. These are listed here as a reference, as the companies voluntarily informed ARIB of these IPRs.

3. General Descriptions

3.1. Overview

This standard specifies requirements of the radio equipment of radio stations based on the WirelessMAN-Advanced air interface specifications developed by IEEE802.16 Working Group for the broadband wireless access service. The basic concept is that this standard is designed to be harmonized with the global standard applicable to IMT-Advanced. To support this, WirelessMAN-Advanced in the global field is adopted by ITU as one of the IMT-Advanced technologies and is characterized as the evolved technology from WirelessMAN which has also been recognized as an IMT-2000 global standard.

The WirelessMAN-Advanced standard specifies the physical layer and the MAC layer of the radio access network. The specifications of both layers are, in principle, transposed from the Global Core Specification (GCS) provided by IEEE for ITU as WirelessMAN-Advanced technology. The WirelessMAN-Advanced GCS consists of the body document, IEEE802.16-2009, with three amendment documents, i.e. IEEE802.16j-2009, IEEE802.16h-2010 and IEEE802.16m-2011. The core features of WirelessMAN-Advanced are described in IEEE802.16m-2011 document, while the supplement features are in other three documents.

The standard should include the national regulatory requirements for the radio equipment applicable to WirelessMAN-Advanced technology used in Japan, however they are yet to be specified by the Ministry of Internal Affairs and Communications (MIC) since it is expected that commercial service of WirelessMAN-Advanced will be launched in Japan in near future. They are supposed to be included in this standard as the mandatory requirements when available.

3.2. Scope of application

The WirelessMAN-Advanced System consists of the Mobile Station (MS), Access Service Network (ASN) and Connectivity Service Network (CSN) as shown in Figure 1. This standard specifies the radio interface for the WirelessMAN-Advanced System.

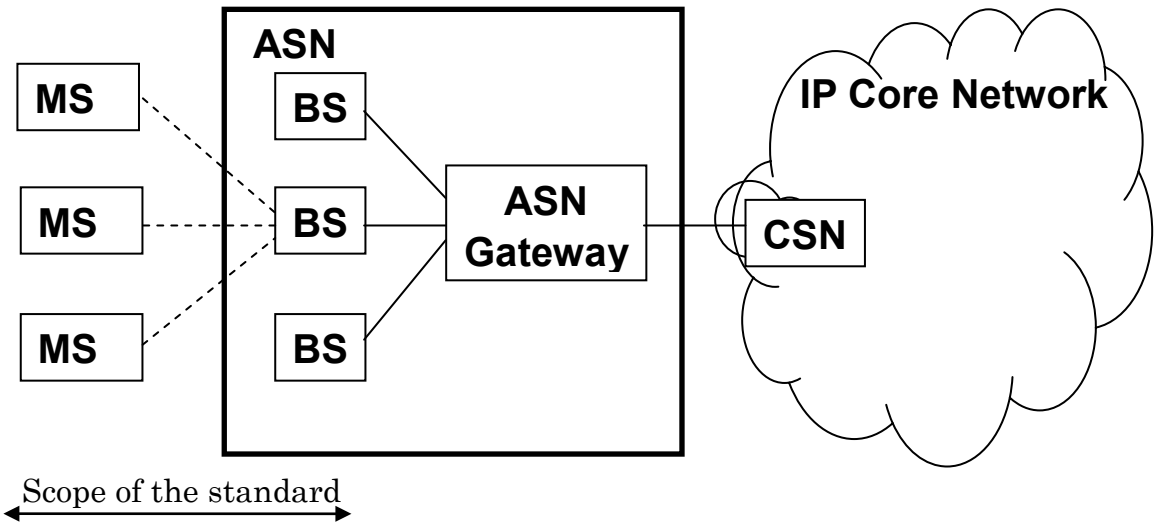

Figure 1 Configuration of WirelessMAN-Advanced System

4. Specification

4.1. Overview of specification

"WirelessMAN-Advanced System" specification is incorporated in IEEE Std 802.16. It is comprised of IEEE Std 802.16-2009, as amended, consecutively, by IEEE Std 802.16j-2009, IEEE Std 802.16h-2010, and IEEE Std 802.16m-2011. The specification is described in clauses and subjects in the standards as bellow Table 1 mentioned.

IEEE Std 802.16 Clause and Subject	IEEE Std 802.16-2009	IEEE Std 802.16j-2009	IEEE Std 802.16h-2010	IEEE Std 802.16m-2011
Clause 1.4: Reference models	Base Specification		Amended	Amended
Clause 2: Normative references	Base Specification		Amended	Amended
Clause 3: Definitions	Base Specification	Amended	Amended	Amended
Clause 4: Abbreviations and acronyms	Base Specification	Amended	Amended	Amended
Clause 5.2: Packet Convergence Sublayer	Base Specification			Amended
Clause 16: *WirelessMAN-Advanced* Air Interface				Base Specification
Annex R: MAC control messages				Base Specification
Annex S: Test Vectors				Base Specification
Annex T: Supported Frequency Bands				Base Specification
Annex U: Radio Specifications				Base Specification
Annex V: Default capability class and parameters				Base Specification

Table 1 Description of the WirelessMAN-Advanced specification

4.1.1. IEEE Std 802.16-2009

Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems

This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless

access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, each suited to a particular operational environment.

4.1.2. IEEE Std 802.16j-2009

Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems – Amendment 1: Multihop relay specification

This amendment updates and expands IEEE Std 802.16-2009, specifying physical layer and medium access control layer enhancements to IEEE Std 802.16 for licensed bands to enable the operation of relay stations. Subscriber station specifications are not changed.

4.1.3. IEEE Std 802.16h-2010

Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems – Amendment 2: Improved coexistence mechanisms for license-exempt operation

This amendment updates and expands IEEE Std 802.16, specifying improved mechanisms, as policies and medium access control enhancements, to enable coexistence among license-exempt systems and to facilitate the coexistence of such systems with primary users.

4.1.4. IEEE Std 802.16m-2011

Standard for local and metropolitan area networks – Part 16: Air interface for broadband wireless access systems – Amendment 3: Advanced air interface

This amendment specifies the WirelessMAN-Advanced air interface, an enhanced air interface designed to meet the requirements of the IMT-Advanced standardization activity conducted by the ITU-R. The amendment is based on the WirelessMAN-OFDMA specification of IEEE Std 802.16 and provides continuing support for WirelessMAN-OFDMA subscriber stations.

4.2. Detailed specification

The detailed specification of the WirelessMAN-Advanced System is as shown in Annex 1, 2, 3 and 4 which are linked to the following electrical documents.

Annex-1: IEEE Std 802.16-2009

Annex-2: IEEE Std 802.16j-2009

Annex-3: IEEE Std 802.16h-2010

Annex-4: IEEE Std 802.16m-2011

5. National Regulatory Requirements

This chapter is not applicable as of September 16, 2011 since the national regulatory requirement has not yet been set forth.

6. Japanese Specific Matters

This chapter is not applicable as of September 16, 2011 since the national regulatory requirement has not yet been set forth.

Attachment 1 List of Essential Industrial Property Rights (selection of option 1)

PATENT HOLDER	NAME OF PATENT	REGISTRATION NO./ APPLICATION NO. 〔Applied in Japan〕	REMARKS
N/A	N/A	N/A	N/A

Attachment 2 List of Essential Industrial Property Rights (selection of option 2)

特許出願人 PATENT HOLDER	発明の名称 NAME OF PATENT	出願番号等 REGISTRATION NO./ APPLICATION NO.	備考（出願国名） REMARKS
パナソニック株式会社	A comprehensive confirmation form has been submitted with regard to ARIB STD-T105 Ver.1.00		
QUALCOMM Incorporated	A comprehensive confirmation form has been submitted with regard to ARIB STD-T105 Ver.1.00		

Approved by the 82nd Standard Assembly

特許出願人 PATENT HOLDER	発明の名称 NAME OF PATENT	出願番号等 REGISTRATION NO./ APPLICATION NO.	備考（出願国名） REMARKS
富士通株式会社	A comprehensive confirmation form has been submitted with regard to ARIB STD-T105 Ver.1.00		

Approved by the 84th Standard Assembly

特許出願人 PATENT HOLDER	発明の名称 NAME OF PATENT	出願番号等 REGISTRATION NO./ APPLICATION NO.	備考（出願国名） REMARKS
QUALCOMM Incorporated*1.00	Multiplexing of real time services and non-real time services for OFDM systems	JP4880177	US6952454;US7664193;US7751492;US7813441;US20100142638;BR;CN;EP;HK;KR;TW
	A method and an apparatus for a quick retransmission of signals in a communication system	JP2003-533078	US6694469;US7127654;US7613978;US20100046497;JP;AU;BE;BR;CA;CN;DE;EP;ES;FI;FR;GB;HK;ID;IE;IL;IN;IT;KR;MX;NL;NO;RU;SE;SG;TW;UA
	Method and apparatus for adaptive transmission control in a high data rate communication system	JP2003-531518	US7088701;JP;BR;CN;DE;EP;ES;FI;FR;GB;HK;IT;KR;NL;SE;TW
	Method and apparatus for fast closed-loop rate adaptation in a high rate packet data transmission	JP4689931	US7245594;US20070064646;JP;AU;BE;BR;CA;CN;DE;EP;ES;FI;FR;GB;HK;ID;IE;IL;IN;IT;KR;MX;NL;NO;RU;SE;SG;TW;UA
	Method and Apparatus for Multiplexing High-Speed Packet Data Transmission with Voice/Data Transmission	JP4068455	US6775254;US20040240401;JP;AU;BR;CA;CN;DE;EP;ES;FR;GB;HK;ID;IL;IN;IT;KR;MX;NO;RU;SG;TW;UA

QUALCOMM Incorporated*1.00	Method and apparatus for power control in a wireless communication system	JP4880187	US6801759;BR;CN;DE;EP;FR;GB;HK;KR;TW
	Method and apparatus for controlling uplink transmissions of a wireless communication system	JP4307847	US7042856;US20060262750;JP;BR;CN;EP;KR;TW
	Coding scheme for a wireless communication system	JP2004-535694	US6961388;US20050276344;BR;CN;EP;HK;KR;TW
	Method and apparatus for utilizing channel state information in a wireless communication system	JP4593878	US6771706;US7411929;US7590182;US7949060;JP;BE;BR;CN;DE;EP;ES;FI;FR;GB;HK;IE;IT;KR;LU;NL;SE;TW
	Method and apparatus for link quality feedback in a wireless communication system	JP2004-531114	US6985453;JP;AU;BR;CA;CN;DE;EP;ES;FI;FR;GB;HK;ID;IE;IL;IN;IT;KR;MX;NL;NO;RU;SG;TW;UA
	Power control for a channel with multiple formats in a communication system	JP4505221	US6983166;US7376438;US8023988;JP;CN;EP;HK;IN;KR;TW
	Rate selection for an OFDM system	JP4335680	US7012883;US20060087972;JP;BR;CN;EP;HK;KR;TW
	Method and system for a multicast service initiation in a communication system	JP2009-180888	US6876636;US20050169203;JP;BE;BG;BR;CN;CZ;DE;EP;ES;FI;FR;GB;HK;HU;IE;IT;KR;NL;PL;RO;SE;TW
	Diversity transmission modes for MIMO OFDM communication systems	JP2011-050074	US7095709;US7990841;AU;BR;CA;CN;EP;HK;ID;IL;IN;KR;MX;NO;RU;SG;TW

QUALCOMM Incorporated*1.00	Random access for wireless multiple-access communication systems	JP4509793	US20040156328;US13/353,924;AU;BR;CA;CN;EP;HK;ID;IL;IN;KR;MX;RU;TW;UA
	Incremental redundancy transmission in a MIMO communication system	JP4741495	US20050052991;JP;AR;AU;BE;BG;BR;CA;CL;CN;CZ;DE;EP;ES;FI;FR;GB;HK;HU;IE;IL;IN;IT;KR;MX;NL;PH;PL;RO;RU;SE;SG;TW;VN
	Mimo system with multiple spatial multiplexing modes	JP4860924	US20040136349;US20080267098;US20080267138;US20100119001;JP;AU;BE;BG;BR;CA;CN;CZ;DE;EP;ES;FI;FR;GB;HK;HU;ID;IE;IL;IN;IT;KR;MX;NL;RO;RU;SE;TW;UA
	Transmit diversity processing for a multi-antenna communication system	JP4739952	US7002900;US20060039275;US20100208841;JP;AU;BR;CA;CN;EP;HK;ID;IL;IN;KR;MX;RU;TW;UA
	Pilot transmission and channel estimation for an OFDM system with excess delay spread	JP2007-519368	US7339999;US8027399;US20080152033;JP;AR;AU;BR;CA;CL;CN;EP;HK;IL;IN;KR;MX;PH;RU;SG;TH;TW;VN
	Multiplexing and transmission of multiple data streams in a wireless multi-carrier communication system	JP2007-525102	US7221680;US20080291860;JP;AU;BR;CL;CN;EP;HK;IL;IN;KR;MX;PH;RU;SG;TH;TW;VN
	A method and apparatus of using a single channel to provide acknowledgement and assignment messages	JP2007-520169	US20050165949;JP;AU;BR;CN;HK;IN;KR

QUALCOMM Incorporated*1.00	High speed media access control	JP4490432	US20050135284;JP;CA;CN;EP;HK;IN;KR;TW
	Multiplexing for a multi-carrier cellular communication system	JP4791459	US7724777;US20100195360;JP;AU;BR;CA;CL;CN;EG;EP;HK;ID;IL;IN;KR;MX;MY;NO;NZ;PH;RU;SG;TW;UA;VN;ZA
	A method of providing a gap indication during a sticky assignment	JP4834174	US20060034173;JP;AU;BR;CA;CL;CN;DE;EP;ES;FI;FR;GB;HK;HU;ID;IL;IN;IT;KR;MX;MY;NL;NO;NZ;PH;RU;SG;TH;UA;VN
	On-demand reverse-link pilot transmission	JP2008-546226	US7706324;US20100238896;JP;CA;CN;EP;HK;ID;IN;KR;NO;NZ;PH;RU;VN
	Shared signaling channel for a communication system	JP2008-507896	US20060018347;CA;CL;CN;EP;HK;IN;KR;TW
	Method and apparatus for reliable transmit power and timing control in wireless communication	JP2009-508371	US20070054691;JP;CN;EP;IN;KR;TW
	Methods and systems for providing enhanced position location in wireless communications	JP2009-521192	US7876265;US7893873;US20110149863;JP;BR;CA;CN;EP;IN;KR;RU;TW
	Negotiated channel information reporting in a wireless communication system	JP4559521	US7907958;US13/047,547;CN;EP;IN;KR;MY
	Method and apparatus for pilot multiplexing in a wireless communication system	JP2009-524362	US8130857;US20100142490;BR;CA;CN;EP;IN;KR;RU;SG;TW

QUALCOMM Incorporated*1.00	Localized and distributed allocation multiplexing and control	JP2009-527931	US20070165568;BR;CA;CN;EP;IN;KR;RU;TW
	Uplink channel estimation using a signaling channel	JP2009-530992	US20080032630;AR;CN;EP;HK;IN;KR;TW
	Feedback of channel state information for MIMO and sub-band scheduling in a wireless communication system	JP2009-531993	US8014455;US20110299626;AR;BE;BG;BR;CA;CN;CZ;DE;EP;ES;FI;FR;GB;HK;HU;IE;IN;IT;KR;NL;PL;RO;RU;SE;SG;TW
	Signal acquisition for wireless communication systems	JP2009-544178	US20070281642;BR;CA;CN;EP;HK;IN;KR;RU;SG;TW
	Inter-cell power control in the presence of fractional frequency reuse	JP2010-508779	US20100105406;BR;CA;CN;EP;IN;KR;RU;SG;TW
	Transmission of information using cyclically shifted sequences	JP2010-516203	US20080165893;AU;BR;CA;CN;EP;HK;ID;IL;IN;KR;MX;MY;NZ;PH;RU;SG;TW;UA;VN
	Circular buffer based rate matching	JP2010-523064	US20090049359;AU;BR;CA;CN;EP;HK;ID;IL;IN;KR;MX;MY;NZ;PH;RU;SG;TW;UA;VN
	Extended microsleep for communications	JP2010-526495	US20090016252;AU;BR;CA;CN;EP;HK;ID;IL;IN;KR;MX;MY;NZ;PH;RU;SG;TW;UA;VN
	Improved blind decoding in a mobile environment	JP2010-538586	US20090067378;CN;EP;IN;KR;TW

QUALCOMM Incorporated*1.00	Downlink grants in a multicarrier wireless communication system	JP2011-530964	US20100034303;AU;BR;CA;CN;EP;HK;IL;IN;KR;NZ;PH;RU;SG;TW
	MIMO and SDMA signaling for wireless very high throughput systems	JP2011-523951	US20100046542;CN;EP;IN;KR;TW
	Method and apparatus for separable channel state feedback in a wireless communication system	JP2011-533372	US20100104033;CN;EP;IN;KR;TW
	Methods and systems using same base station carrier handoff for multicarrier support	JP2011-536497	US20100124201;CN;EP;IN;KR;TW
	Neighbour cell measurements for cell re-selection	JP4465491	US6377803;JP;DE;EP;FI;FR;GB;NL
	A handover method, and a cellular radio system	JP3825049	US6198928;AU;BE;CH;CN;DE;EP;ES;FR;GB;IT;NL;NO;SE
	Diversity transmitter and diversity transmission method	JP3978426	US7158579;US7623590;US20100098187;BE;CA;CN;DE;EP;ES;FI;FR;GB;ID;IE;IN;IT;KR;NL;SE
	Method of ciphering data transmission and cellular radio system employing the method	JP4555261	US6535979;AT;AU;BR;CN;DE;EP;ES;FI;FR;GB;IN;IT;KR;NL
	Transporting QoS Mapping Information in a Packet Radio Network	JP3625769	US7167447;US20060126547;AU;BE;CA;CH;CN;DE;EP;ES;FI;FR;GB;IT;MX
	Measurement reporting in a telecommunication system	JP4122132	US7003290;US7499701;CA;CN;DE;EP;ES;FI;FR;GB;HK;IT;NL;SE

QUALCOMM Incorporated*1.00	A method for controlling connections to a mobile station	JP3515073	US6807421;US7684361;JP;BE;BR;CN;DE;EP;ES;FI;FR;GB;IT;NL;SE
	A method for initiating in a terminal of a cellular network the measurement of power levels of signals and a terminal	JP2006-129531	US7096021;AT;BR;CA;CH;CN;DE;EP;ES;FI;FR;GB;IT;KR;NL;SE
	Scalable channel feedback for wireless communication	WO2011041759*	US20110237282;TW
	Method and apparatus for providing configurable layers and protocols in a communications system	JP2003-524328	US6539030;US7106779;US7158537;AU;BR;CA;CN;DE;EP;ES;FI;FR;GB;HK;ID;IL;IN;IT;KR;MX;NL;NO;RU;SE;SG;UA
	Method and apparatus for measuring channel state information	JP2003-530010	US6473467;JP;AT;AU;BE;BR;CA;CH;DE;DK;EP;ES;FI;FR;GB;GR;HK;ID;IE;IL;IN;IT;KR;MX;NL;NO;PT;RU;SE;SG;TW;UA
	Reverse link automatic repeat request	JP2006504337	US20040081124;JP;AU;BR;CA;CN;EP;HK;ID;IL;IN;KR;MX;RU;TW;UA
	Power control for a wireless communication system utilizing orthogonal multiplexing	JP4616339	US20060019694;US20080214121;US20090023466;JP;AR;AU;BE;BG;BR;CA;CL;CN;CZ;DE;EP;ES;FI;FR;GB;HK;HU;ID;IE;IL;IN;IT;KR;MX;NL;NO;NZ;PH;PL;RO;RU;SG;TW;UA;VN;ZA

QUALCOMM Incorporated*1.00	Pilot signal transmission for an orthogonal frequency division wireless communication system	JP2008-533928	US20060209670;BR;CA;CL;CN;EP;HK;IN;KR;RU;SG;TH;TW
	Scalable frequency band operation in wireless communication systems	JP2011-243649	US8045512;US20120002623;CN;EP;HK;IN;KR;TW
	Method and apparatus for low-overhead packet data transmission and control of reception mode	JP2010-501148	US20080056229;AU;BE;BG;BR;CA;CN;CZ;DE;EP;ES;FI;FR;GB;HK;HU;ID;IE;IL;IN;IT;KR;MX;MY;NL;NO;NZ;PH;PL;RO;RU;SE;SG;TW;UA;VN
	Utilizing restriction codes in wireless access point connection attempts	JP2011-504055	US20090137228;AU;BR;CA;CN;EP;HK;ID;IL;IN;KR;MX;MY;NZ;PH;RU;SG;TW;UA;VN
	Classifying access points using pilot identifiers	JP2011-504059	US20090135784;AU;BR;CA;CN;EP;HK;ID;IL;IN;KR;MX;MY;NZ;PH;RU;SG;TW;UA;VN
	Method and apparatus for preamble creation and communication in a wireless communication network	JP2011-504015	US20090125792;CN;EP;IN;KR;TW
	A technique for compressing a header field in a data packet	JP4159287	US6680955;JP;AU;BE;BR;CA;CN;DE;EP;ES;FI;FR;GB;IE;IN;IT;KR;MX;NL;RU;SE

QUALCOMM Incorporated*1.00	Apparatus and Method for Reducing Message Collision Between Mobile Stations Simultaneously Accessing a Base Station in a CDMA Cellular Communications System	JP3152353	US5544196;US6615050;US6985728;US7426391;US7734260;US20060121897;AT;AU;BE;BG;BR;CA;CH;CN;DE;DK;EP;ES;FI;FR;GB;GR;HK;HU;IE;IL;IT;KP;KR;MX;NL;PT;RU;SE;SK;ZA
	Method and Apparatus for Correction and Limitation of Transmitter Power on the Reverse Link of a Mobile Radio Telephone System	JP3452930	US5452473;US5590408;US5655220;AU;BR;CA;CN;DE;EP;ES;FI;FR;GB;HK;ID;IN;IT;KR;MX;RU;SE;VN
	Method and apparatus for performing mobile assisted hard handoff between communication sSystems	JP4234209	US5940761;US6304755;US6810254;AM;AU;AZ;BR;BY;CA;CL;CN;DE;EA;EP;ES;FI;FR;GB;HK;ID;IE;IL;IN;IT;KG;KR;KZ;MD;MX;NL;NZ;RU;SE;SG;TJ;TM;TW;UA;ZA
	Method of and apparatus for encrypting signals for transmission	JP4260896	US6075859;US6385316;US6768797;US7995751;US13/206,300;BE;BR;CA;CN;DE;EP;ES;FI;FR;GB;HK;IE;IN;IT;KR;MX;MY;NL;RO;RU;SE;ZA

QUALCOMM Incorporated*1.00	Method and apparatus for high rate packet data transmission	JP4339508	US6574211;US7079550;US7184426;US7499427;US7848282;US7848283;US7848284;US7848285;US7995531;US8005042;US8009625;US8077655;US8089924;US20060280160;US20070025267;US20090310588;JP;AR;AT;AU;BE;BR;CA;CH;CL;CN;CY;CZ;DE;DK;EP;ES;FI;FR;GB;GR;HK;HU;ID;IE;IL;IN;IT;KR;LU;MC;MX;MY;NL;NO;NZ;PL;PT;RO;RU;SE;SG;UA;VN;ZA
	Method and apparatus for performing mobile station assisted hard handoff using off line searching	JP4152587	US6134440;CN;DE;EP;FR;GB;HK;KR;TW
	Method and apparatus for coordinating transmission of short messages with hard handoff searches in a wireless communications system	JP2002-514844	US6535563;US7010068;US7653157;US7664209;JP;AU;BR;CA;CN;DE;EP;FI;FR;GB;HK;IL;IT;KR;MX;NO;SE;SG;TW
	Reservation multiple access	JP4485687	US6256301;CN;EP;HK;KR

*1.00These patents are applied to part of ARIB STD-T105 Ver.1.00.

特許出願人 PATENT HOLDER	発明の名称 NAME OF PATENT	出願番号等 REGISTRATION NO./ APPLICATION NO.	備考（出願国名） REMARKS
NOKIA CORPORATION*1.20	A multiple access radio system	JP 19940120447, JP 3090300	DE, EP, FR, US-CONT, GB
	Data transmission in a radio telephone network	JP 19940213046, JP 4184450	JP-DIV 20050005496, JP-DIV 3842805, AT, US-CIP, DE, EE, EP, EP-DIV, ES, FI, FR, GB, IT, NL, SE, US-CONT, CN
	A system for transmitting packet data in radio telephone TDMA systems	JP 19950140936, JP 3880642	AT, US, CN, DE, EP, FI, FR, GB, IN, IT, NL, SE, CH
	Method and system for channel allocation in a radio system	JP 19960522063, JP 3155010	GB, KR, RU, US, US-CONT, CN, DE
	Method for encryption of data transfer	JP-DIV 20060152164, JP-DIV 4523569	AU, DE, ES, FI, FR, GB, IN, IT, NL, SE, US, CN
	Allocating idle time to a mobile station	JP 19980198865, JP 3943253	JP-DIV 20060321955, JP-DIV 4638404, CN, DE, EP, GB, IT, US, FR

NOKIA CORPORATION*1.20	Method of controlling communication resources	JP 20000505760, JP 4065367	ES, EP, FR, GB, IN, IT, JP, MY, NL, PH, SE, US, ZA, BE, CA, CH, CN, DE, FI
	Data transmission method and radio link system	JP 20000604550, JP 3726232	ES, EP, FR, GB, IT, NL, SE, US, AU, BE, BR, CA, CH, CN, DE, FI
	Method for radio resource control	JP 19970292991, JP 3542705	BR, US, DE, EP, ES, FI, FR, GB, HK, IN, IT, KR, NL, SE, CN
	Data transfer in a mobile telephone network	JP 20000510263, JP 3445577	AT, CN, DE, FI, FR, GB, HK, IT, NL, RU, SE, US, AU
	Hochwald construction of unitary matrix codebooks via eigen coordinate transformations	JP 20070550865, JP 4494478	US, RU, CN, ZA, AU, CA, EP, KR, IN
	Method and arrangement for transferring information in a packet radio service	JP 20000604577, JP 2002539680	FI, GB, KR, US, CN, EP, FR, DE, IT, EP-DIV, FR-DIV, DE-DIV
	Data transmission method and system	JP 20040507188, JP 4533742	
	Data transmission method, and system	JP 20040504417, JP 4223474	CN, EP, US
	Method and system for supporting the quality of service in wireless networks	JP 20000568269, JP 4467797	JP-DIV 20090229463, JP-DIV 4477694, CN, EP, US, NL, DK, DE, GR, IE, IT
	System and method for space-time-frequency coding in a multi-antenna transmission system	JP 20070538532, JP 4603584	TH, KR, US, AU, BR, CA, CN, EP, IN, MX, RU, SG, ZA, TW

NOKIA CORPORATION*1.20	Relay	JP 20090517475, JP 2009543400	KE, US, CN, EP, IN, KR
	Topology and route discovery and management for relay networks	JP 20090517470, JP 2009543398	US, TH, AU, CN, KR, IN, ID, IL, EP
	METHOD AND APPARATUS IMPLEMENTING RETRANSMISSION IN A COMMUNICATION SYSTEM PROVIDING H-ARQ	JP 2003524130, JP 4448328	KR, GB, US, ZA, BR, CA, CN, EP, FR, DE, IT, NL, SG

*1.20These patents are applied to part of ARIB STD-T105 Ver.1.20.

Approved by the 84th Standard Assembly

Reference (Not applied in Japan)

特許出願人 (PATENT HOLDER)	発明の名称 (NAME OF PATENT)	出願番号等 (REGISTRATION NO. / APPLICATION NO.)	備考(出願国名) REMARKS
QUALCOMM Incorporated*1.00	Enhanced Channel Interleaving for Optimized Data Throughput	US6987778	US7953062;US20120026939
	Apparatus and method for use in effecting automatic repeat requests in wireless multiple access communications systems	CA2547910	EP
	Methods and apparatus for operating mobile nodes in multiple states	US6788963	TW
	Signalling methods for MMSE precoding with eigenmode selection	US20100238912	TW
	Data transmission in a TDMA system	US7158489	AT;DE;EP;FR;GB
	Time division multiple access radio systems	US6967943	AT;AU;CN;DE;EP;FI;FR;GB;IT;NL;RU;SE
	Methods and systems for mobile station location determination in WIMAX	US20110019649	TW
	Precoding control channels in wireless networks	US20110141927	TW

QUALCOMM Incorporated*1.00	Method and Apparatus for Utilizing Channel State Information in a Wireless Communication System	US7006848	
	Multiplexing and transmission of multiple data streams in a wireless multi-carrier communication system	US20090175210	EP;TW
	Pilot signal transmission for an orthogonal frequency division wireless communication system	US20090213950	TW
	Use of supplemental assignments to decrement resources	US20110255518	
	Method and apparatus for using a MAC protocol for broadcast	US8014331	TW
	Mobile Station Assisted Soft Handoff in a CDMA Cellular Communications System	US5640414	
	Remote Transmitter Power Control in a Contention Based Multiple Access System	US5604730	

*1.00These patents are applied to part of ARIB STD-T105 Ver.1.00.

特許出願人 (PATENT HOLDER)	発明の名称 (NAME OF PATENT)	出願番号等 (REGISTRATION NO. / APPLICATION NO.)	備考(出願国名) REMARKS
NOKIA CORPORATION*1.20	Method and a system for reserving transmission capacity	US 19990448004, US 6831894	None
	CDMA radiotelephone having optimized slotted mode and long code operation	US 19940178401, US 5491718	US-CONT
	System for transmitting packet data in digital cellular time division multiple access (TDMA) air interface	US-REI 19990255325, US RE39375	AT, CN, DE, EP, FI, FR, GB, IN-DIV, IT, NL, SE, AU
	Upstream access method in bidirectional telecommunication system	US 19980068211, US 6243364	None
	METHOD FOR TRANSMITTING PACKET SWITCHED DATA IN A MOBILE COMMUNICATION SYSTEM	EP 19980917162, EP 0988731	DE, US
	Method and system for digital signal transmission	US 20000514714, US 6353638	EP
	Asymmetric high-speed data transmission apparatus and method in a mobile communications network	US 19980945387, US 6240076	AT, BE, CA, CH, CN, DE, EP, FR, GB, IT, NL, SE, US, AU
	Security of packet-mode transmission in a mobile communication system	US 19970952046, US 6118775	AU, CA, CH, CN, DE, EP, ES, FR, IN, IT, NL, SE, GB, BE

NOKIA CORPORATION*1.20	Method for transmitting packet data with hybrid FEC/ARG type II	US 19960725250, US 5946320	DE, EP, GB, FR
	Method, device and communication network for avoiding collisions in radio communication	US 19960724909, US 5966378	IT, NL, RU, SE, GB, AT, AU, CN, DE, FI, FR
	Mobile station and network having hierarchical index for cell broadcast service	US 19970915052, US 6201974	BR, MX, US-CONT
	Method for scheduling packet data transmission	US-DIV 20080152597, US-DIV 8054811	BR, GB, CN, EP, HK, KR, US-CONT, US-DIV, US-DIV, US-CPA, FR, DE, SE, CN
	Point-to-multipoint transmission in a mobile communication system	EP 19990925043, EP 1078540	EP-DIV, US, US-CONT, NL, PT, ES, SE, GB, AT, FI, FR, DE, IT
	Non-zero complex weighted space-time code for multiple antenna transmission	US 20010819573, US 6748024	CA, CN, MX, RU, KR
	Diversity transmission method and system	US 20020009128, US 6987959	DE, EP, GB
	Method for controlling the data signal weighting in multi-element transceivers and corresponding devices and telecommunications network	EP 20000981265, EP 1334573	BE, DE, ES, GB, IT, NL, US, FR
	Handover method	US 20040492915, US 7392051	EP, NL, EP-DIV, GB, DE, GR, US-CONT, ES

NOKIA CORPORATION*1.20	High rate transmit diversity transmission and reception	US 20040500633, US 7436896	ZA, CN, EP, EP-DIV, ID, IN, KR, MX, RU, US-DIV, CA
	Method supporting the quality of service of data transmission	US 19990237513, US 6501741	EP, FI, GB, DE
	Resource allocation in packet-format data transmission	US 19990370737, US 6553006	None
	System and method for discovering network interface capabilities	US 20020293952, US 7515561	CN, EP
	Method of determining the validity of service announcements	US 20020306162, US 7054619	None
	Transmission method and transmitter	US 20040770395, US 7486739	AR, CN, EP, MY, TW, IN
	Bandwidth efficient HARQ scheme in relay network	US 20070653904, US 2007190933	CN
	Apparatus, method and computer program product providing enhanced location update scheme for mobile station in a relay-based network	US 20060479163, US 7640028	CN
	Relay-station assignment/re-assignment and frequency re-use	US 20070888800, US 2008031197	KR, CN, EP

NOKIA CORPORATION*1.20	SIMPLE AND EFFICIENT MECHANISM FOR SYNCHRONISING COMMUNICATION SCHEDULING IN MEDIUM WITH MULTIPLE RELAY INTERVALS	RU 20090107579, RU 2416883	CN, IN
	BANDWIDTH ALLOCATION FOR RELAY NETWORKS	US 20070871649, US 2008117854	RU, CN, IN
	METHOD AND APPARATUS FOR PROVIDING AN ERROR CONTROL SCHEME IN A MULTI-HOP RELAY NETWORK	US 20070939999, US 2009141676	EP, IN
	TECHNIQUES FOR RESOURCE ALLOCATION FOR STATIONS IN A FDD WIRELESS NETWORK	US 20080111958, US 2009268645	None
	STATUS REPORT MESSAGES FOR MULTI-LAYER ARQ PROTOCOL	US 20080665416, US 2010275087	EP, CN
	FRAME STRUCTURES WITH FLEXIBLE PARTITION BOUNDARY FOR WIRELESS NETWORKS	US 20080035262, US 2009213766	None

*1.20These patents are applied to part of ARIB STD-T105 Ver.1.20.

Change History

WirelessMAN-Advanced System

ARIB STD-T105

Version	Date	History
Ver. 1.00	September 16, 2011	Enacted by the 81st ARIB Standard Assembly
Ver. 1.10	December 6, 2011	Approved by the 82nd ARIB Standard Assembly
Ver. 1.20	July 3, 2012	Approved by the 84th ARIB Standard Assembly
Ver. 1.30	December 18, 2012	Approved by the 86th ARIB Standard Assembly

Change History List of Standards Ver.1.30

No.	Item No.	Title	Page	Change Summary
1	Attachment 2	Industrial Property Rights for Ver1.00	12	Addition of IPR list
2	Attachment 2	Industrial Property Rights for Ver1.00	13 ~22	Addition of IPR list
3	Reference	List of Essential IPRs, Reference	23 ~24	Addition of IPR list
4	Attachment 2	Industrial Property Rights for Ver1.20	23 ~25	Addition of IPR list
5	Reference	List of Essential IPRs, Reference	28 ~31	Addition of IPR list

To: Secretariat of Standard Assembly Meeting of the Association of Radio Industries and Businesses
FAX: +81-3-3592-1103 E-mail:std@arib.or.jp
Nittochi Bldg. 11th Floor, 1-4-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-0013, Japan

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WirelessMAN-Advanced System ARIB STD-T105 Version 1.30

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11F, Nittochi Building,
1-4-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-0013, Japan
TEL 03-5510-8590
FAX 03-3592-1103

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