



WirelessMAN-Advanced System

ARIB STANDARD

ARIB STD-T105 Ver. 1.10

Version 1.00 September 16th 2011

Version 1.10 December 6th 2011

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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.

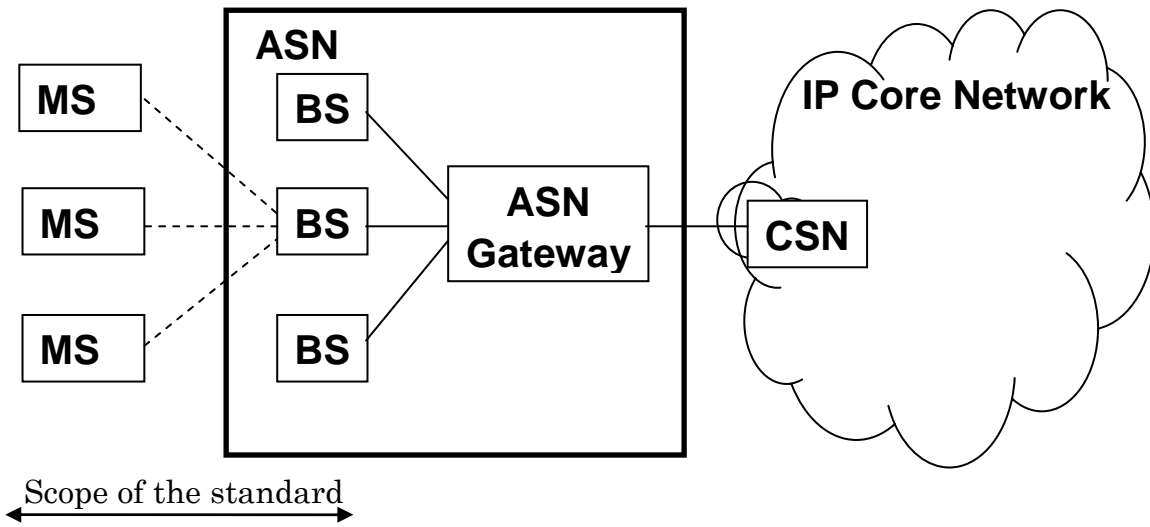


Figure 1 Configuration of WirelessMAN-Advanced System

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: <i>WirelessMAN-Advanced</i> 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.

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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		

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
富士通株式会社	A comprehensive confirmation form has been submitted with regard to ARIB STD-T105 Ver.1.00		

ARIB STD -T105**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
N/A	N/A	N/A	N/A

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

Change History List of Standards Ver.1.10

No.	Item No.	Title	Page	Change Summary
1	Attachment 2	Industrial Property Rights for Ver1.00	12	Addition of IPR list

ARIB STD –T105

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WirelessMAN-Advanced System ARIB STD-T105 Version 1.10

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Version 1.10 December 6th 2011

Published by
Association of Radio Industries and Businesses

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