Newsletter ARIB SEASON

Spring

April 2014

The Association of Radio Industries and Businesses (ARIB) was established to drive research and development of new radio systems, and to serve as a Standards Development Organization for international unification of standards, etc. in the field of telecommunications and broadcasting.

ARIB has been enjoying collaboration with foreign organizations to pursue its mission. A newly published Newsletter ARIB SEASON will be delivered quarterly to provide updated ARIB activities to strengthen cooperative relationship.

This spring edition covers mainly broadcast related subjects.

Abstract of ARIB

1 Objectives

The objectives of ARIB are to carry out studies, research and development (R&D), consultation work, etc. relating to radio wave use.

These activities are conducted to promote the practical application and dissemination of radio systems in the telecommunications and broadcasting fields, as well as to achieve robust advancement and development of radio industries, thereby contributing to public welfare.

2 Activities

ARIB activities include:

1 Conducting studies and R&D on radio wave use in the telecommunications and broadcasting fields

2 Consulting, educating users on dissemination, and collecting and providing materials and information on radio wave use in the telecommunications and broadcasting fields

3 Developing radio system related standards in the telecommunications and broadcasting fields

4 Liaison, coordination, and cooperation with foreign organizations working on radio wave use in the telecommunications and broadcasting fields

Event

EBU-ARIB meeting

European Broadcasting Union (EBU) and ARIB had a first meeting on January 21, 2014 at ARIB office.

ARIB welcomed EBU delegation with 12 members including Simon Fell, Director of Department of Technology & Innovation; Hans Hoffmann, Head of Media Fundamentals & Production, Department of Technology & Innovation; Arild Hellgren, Chairman of EBU Technical Committee, and Andy Bower, Vice-Chairman of EBU Technical Committee. Attendants from ARIB were Matsui, Senior Managing Director; Sato, Managing Director; Yokoo, Executive Director and other 6 engineers.

At the meeting, current activities of EBU and ARIB were introduced followed by exchanging views on future cooperation.

Attendance in EBU-ARIB Meeting

Standard Assembly

1 The 90th Standard Assembly held on December 10, 2013. New one-STD, revised five-STDs and revised seven-TRs were approved.

They were uploaded in ARIB web-site on December 25, 2013.

New Standard:

ARIB STD-B57;1.2GHz/2.3GHz-Band Portable OFDM Digital Transmission System for Television Program Contribution

2 The 91st Standard Assembly held on March 18, 2014. New two-STDs, revised twenty-STDs and revised five-TRs were approved.

They will be uploaded in ARIB web-site on April 10, 2014.

New Standard:

ARIB STD-B58; Interface for UHDTV Production Systems

ARIB STD-B59; Three-dimensional multichannel stereophonic sound system for programme production

Monthly seminars on radio wave use

No.117	January 30, 2014
Title	Outlook for the future research and development trend of NICT on wireless network technology
Speaker	Mr. Hiroyuki Yano, Director General of Wireless Network Research Institute, NICT (the National Institute of Information and Communications Technology).
Summary	The seminar covered the history of wireless network research, research vision and role, outlook for the future research and implementation in NICT.

No.118	February 18, 2014
Title	Outlook for the future and the latest trends in streaming video distribution technology in the Internet
Speaker	Mr. Hiroyuki Niwa, NTT Electronics Corporation
Summary	The seminar covered the challenges and the current state of streaming technology, overview streaming standard approved by ISO / IEC of (MPEG-DASH) and indicated evolutional world in the future.

UHDTV System Parameters for Programme Production
(STD-B56 Ver.1.0　March 2013)

This standard specifies the system parameters of the UHDTV for programme production system. It is a subset of ITU-R BT.2020 and its parameter values are selected to meet program production for a broadcasting service in Japan.

English version is not available.

1.2GHz/2.3GHz-Band Portable OFDM Digital Transmission System for Television Program Contribution
(STD-B57 Ver.1.0　December 2013)

This standard specifies the OFDM digital transmission system with SISO (Single-Input Single-Output) mode for the FPU (Field Pickup Unit), a kind of portable radio transmission equipment for television program contribution in 1.2GHz/2.3GHz-band.

English version is not available.

Interface for UHDTV Production Systems
(STD-B58 Ver.1.0　March 2014)

This standard specifies the interface for UHDTV equipment that meets UHDTV System Parameters for Programme Production (ARIB STD-B56).

English version is not available.

Three-dimensional Multichannel Stereophonic Sound System for Programme Production
(STD-B59 Ver.1.0　March 2014)

This standard specifies the three-dimensional multichannel stereophonic sound system with 22.2-channel (22 main channels plus 2 low frequency effect channels, that are arranged on three layers). This system is intended to be applied to the sound system of the UHDTV.

English version is not available.

Technology

Study for Broadcasting System

1 Quality Evaluation Method for Broadcasting

(1) Flat Display Image Quality Evaluation

The experiment on the relationship between appearance and screen size is conducted. It is observed that appearance does not depend on the screen size, and that appropriate environment needs to be fixed at the time of evaluation.

(2) Sound Quality Evaluation

Regarding the evaluation of the next generation 3D multi-channel sound system, the methods for the subjective assessment that stipulated in ITU-R BS.1116 is being studied.

The proposed amendments to the method for the subjective assessment of intermediate tone quality (MUSHRA method) in ITU-R BS.1534 are discussed and comments are sent to Rapporteur group of ITU-R WP6C.

2 New Technology for the Next-generation Broadcasting System

(1) Future 3D Television

The research and study are conducted for the future glassless 3D television system. As an initial step, the current status of the stereoscopic 3D system is surveyed.

(2) Hybrid broadcast broadband service

A discussion on hybrid broadcast broadband service is in progress.

(3) Transmission Technology for Next-Generation Digital Broadcasting

The study is conducted on transmission technologies and transmission systems for the television program contribution that exceed current transmission bit rate.

1 Digital Broadcasting Systems

(1) Multiplexing Technology

Multiplexing of UHDTV and V-low multimedia broadcasting are being studied.

A discussion on the multiplexing for satellite UHDTV broadcasting is in progress focusing on MMT/TLV system and extended MPEG-2TS system.

(2) Video Coding Technology

The subjective evaluation experiment is conducted to estimate bit rate required to obtain broadcast quality when encoding UHDTV video using HEVC (High Efficiency Video Coding).

The work is in progress to make operational guidelines and to find constraints of encoding parameters in case of using HEVC.

(3) Audio Coding Technology

Regarding the input format and coding technology for UHDTV audio, the technical specification and the method for experiment are discussed.

(4) Data Broadcasting

The study is focused on service image and use case of the data broadcasting on UHDTV (4K/8K).

(5) Access Control Technology

The access control technology of UHDTV is studied. Both the MMT/TLV method and the extension MPEG-2 TS method are in discussion with respect to scramble subsystem.

In addition, it is concluded to adopt a triple key method, which is same as the current broadcasting, for the access control functions of related information subsystem.

(6) Satellite Digital Broadcasting

The study on the channel coding method of UHDTV satellite broadcasting is in progress.

(7) Terrestrial Digital Broadcasting Transmission Coding

The new additional transmission method for multimedia broadcasting in VHF-low band is discussed. The work result will be attached to Transmission System for Terrestrial Mobile Multimedia Broadcasting Connected Segment Transmission (STD-B46).

2 Program Production Systems

(1) Video Program Production Systems

The studies related to video specification and technical trends are conducted.

(2) Sound Program Production Systems

The operational issues regarding Operational Guidelines for Loudness of Digital Television Programs (TR-B32) are in discussion. Responding to the question from outer organization, it is confirmed that TR-B32 is developed to control audio programme by average loudness level and true-peak level. Since mode of short term loudness is out of the scope of TR-B32, the specification for indicating meter designed in ITU-R BS.1771 is treated as a reference and annexed to TR-B32.

(3) File Format of Television Program

The studies on security guideline of program files and online conversion method of packed programs are in progress.

(4) Digital Closed-caption Production

The work is conducted to standardize multipurpose closed-caption language.

3 Transmission of Television Program Contribution

(1) Terrestrial Radio Transmission of Television Program Contribution

The work is conducted to standardize 1.2GHz / 2.3GHz-Band Portable OFDM Digital Transmission System for Television Program Contribution.

4　Ultra-High-Definition Television Broadcasting Systems

(1) Video Program Production Systems for UHDTV

The work is conducted to standardize UHDTV System Parameters for Program Production (STD-B56) in line with the discussion in ITU-R. And contribution documents are sent to MPEG and ITU-R WP6C. The work extends to HFR (High Frame Rate) extension time code, based on current SMPTE standard.

(2) Sound Program Production Systems for UHDTV

The work on 3D sound program production system that exceeds 5.1-channel-surround system is conducted.

(3) Equipment Interfacing

The work is conducted to standardize equipment interfacing to meet UHDTV System Parameters for Programme Production.

Proposed specifications are as follows:

1) Only "a pixel interleaved" be applied to divide 4K into 2K
2) Scrambler be not applied
3) Bit rate be 10.692Gbps
4) The 8B/10B synchronization code should be "EAV / SAV rewrite"
5) Jitter provisions be the same as the ST435 to match SMPTE standard
6) Placement of 24 core of 10G link be fixed
7) A format that can be transmitted within 12-core, should be arranged by stuffing link-signal to make 12-core receiver and transmitter be available
8) Unified one type connector be adopted